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Standardization And Other Problems Taken Up At Early Meetings

By V. B. Guthrie

STAFF REPRESENTATIVE

ST. LOUIS, Dec. 11

IF PRELIMINARY activity is any guide, the fourth annual meeting of the American Petroleum Institute, convening at Hotel Statler here today, will be the best on record. Yesterday the leading hotels were turning away visitors without advance reservations. The convention really started Dec. 10 for an advance guard of several hundred came to attend various preliminary meetings to get started things to be presented before the official meeting later in the week.

The transportation committee of the Institute had an all day session on railroad traffic matters. The executive committee of the Western Petroleum Refiners Association held a meeting. Separate groups were busy on the Institute's standardization of oil field equipment program. Cable tools and rotary equipment, oil field belting, casing and iron pipe were taken up on the standardization program.

Other Preliminary Meetings

Committee D-2 of the American Society for Testing Materials held an unofficial meeting and the fire prevention committee of the Institute met to discuss certain phases of fire hazard from lightning, with H. E. Felton, chairman of the board of the Standard Tank Line Co., presiding. The transportation committee took up the proposed plan of abridgment of the thermal expansion tables to give the industry an accurate instrument for computing gallonage change in tank car shipments through temperature variations.

Dr. Van H. Manning, technical director of the Institute who with a technical group has given considerable attention to this subject, presented the plan of abridgment, which is to be submitted to the industry generally for its consideration. It is generally agreed the present method in general use for computing temperature variations by allowing 1 per cent in volume for 20 degrees change in temperature is at best, a rule of thumb method and allows for some considerable argument between shipper and consignee when applied to oils of various gravities.

The larger companies have worked out their own tables for taking various gravities into consideration and it is felt that one uniform method should be used by the whole industry and the institute with the co-operation of the U. S. Bureaus of Standards and Mines.

Bring Up Rate Plan

Later in the day representatives of the Western Refiners brought before the transportation meeting the proposed plan for general adjustment of freight rates on oil by dividing the country into groups with one tariff covering rates over the country from each group. These representatives asked serious consideration by all oil companies' traffic men of their proposal, and stated the plan would probably be brought before the Interstate Commerce Commission regardless of whether it was approved by the oil interests over the entire country.

They suggested one modification from their plan first announced a few weeks ago, that being possible elimination of territory west of Rocky Mountains. Assistant Secretary Boyd of the Institute brought to the attention of the transportation committee a letter from Col. Dunn of the Bureau of Explosives, suggesting that an amendment be made to its B.C.L. 190 to provide that the unloading from private tracks of the petroleum products flashing at 200 degrees F. or below be expressly prohibited except where the consignee had provided tankage and unloading lines as called for in the Bureau's regulations.

Suggestion Is Opposed

Fuel oil and gas oil were exempted from the suggested provision. Col. Dunn's letter stated this amendment was based on a suggestion from the Standard Oil Co. of Indiana. Its effect would be to prohibit and provide penalties under the Bureau's regulations for unloading into tank wagons or drums on private sidings. The transportation committee oposed this suggestion chiefly on the ground that it would greatly extend the definition of petroleum products defined as inflammables. At present inflammable petroleum products are those flashing at 80 degrees F. or under. Under the proposed amendment practically everything up to 200 degrees F. would be included.

Judge C. D. Chamberlin, secretary of the National Petroleum Association, brought to the committee's attention the unfair attitude of the railroads in charging demurrage on private cars on tracks of lessees, urging that where the railroad had neither any expense or liability, it had no right to charge for demurrage or storage. He stated the present general form of sidetrack agreement, where the road is allowed the use of the private side track, imposes on the industrial company all the obligations of railroad property but exempts the roads from liability for accidents, even through the road's carelessness. Upon Judge Chamberlin's motion the transportation committee is to suggest an equitable, uniform contract for siding provision to the American Railway Association.

Various other topics were on the docket for the committee and later this week, it will take up many of these points with representatives of the railway association here in St. Louis.

Standardization Meeting

The committee dealing with pipe standardization met with J. Edgar Pew, Dallas, Sun Oil Co. as chairman. Discussions of oil operators and manufacturers resulted in a tentative agreement on a number of points and more or less lack of agreement regarding the effective results of other proposals outlined. Insofar as this session was concerned the tensile strength per square inch of high carbon steel was tentatively revised from 75,000 pounds to 72,000 pounds and the yield point from 45,000 pounds to 42,000

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Development Of Oil Heating Trade Features Institute Meeting

Staff Special
ST. LOUIS, Dec. 12

THE fourth annual meeting of the American Petroleum Institute which began its sessions at Hotel Statler here yesterday, bids fair to be one of the most important in the history of the institute from the standpoint of actual helpfulness to the industry.

Perhaps the most important feature of the meeting is the amount of time allotted on the program to consideration of the wider use of oil as fuel and the character of the men who are carrying on the discussion. While the most of the formal papers read on the subject and most of the discussion concerned the comparatively new branch of domestic heating, use of oil in industrial and marine burners of various sorts was authoritatively discussed.

In fact, at the afternoon session the first day, Henry L. Doherty, who recently has been active in promoting the interest of the oil industry in the possibilities of the domestic oil heating market, addressed the convention on the subject under the heading of "Utilization of Petroleum Products."

The newly formed American Association of Oil Burner Manufacturers which is holding its first annual meeting here in conjunction with the institute meeting, figured prominently on the institute convention program.

For several years the burner manufacturers and some of the oil companies have been working to develop the domestic heating oil market but they have been working largely in the dark insofar as knowledge of each other's aims and problems were concerned. This convention is the first time that representatives of the two industries have met together, showed each other the problems that confront them, given each other the benefit of their experience and made plans for co-operative efforts to broaden the market to the benefit of both industries and the public.

Voice Respective Viewpoints

One of the group sessions was given over entirely to the discussion of the home heating problem. At this session the subject, "What the Oil Burner and the Oil Industries Can Do For Each Other And The Public," was discussed from the standpoint of the burner men by Edward P. Bailey, National Airoil Burner Co., representing the American Association of Oil Burner Manufacturers, and from the standpoint of the oil man by G. I. Sweney, president of the Sweney Gasoline & Oil Co., Peoria, Ill. The papers of Mr. Bailey and Mr. Sweney are to be found on another page in this issue.

C. H. Chalmers, Chalmers Oil Burner Co., Minneapolis, read a paper on "Heating Houses With Oil", and J. Parker B. Fiske, Boston, president of the New England Oil Heating Association, took part in the discussion.

At another group session J. M. Johnston, fuel agent for the M. K. & T. railroad, delivered a paper on "The Burning of Fuel Oil By Railroad Locomotives," which laid before the oil industry the most comprehensive and authoritative selling talk for use in marketing their product for the use of railroads that has ever been published. Mr. Johnston is a recognized authority on the subject of railroad fuels. His paper will be found in another part of this issue.

"The Use And Value Of Oil Under Boilers And In Diesel Engines For Ship Propulsion," was another paper on the use of oil for fuel, delivered at another group session by Joseph E. Sheedy, vice president in charge of operations of the Emergency Fleet Corp. At the same session a talk on "Institutional Educational Advertising Of Oil As Fuel", was given by W. M. Horner, president of the Mahr Manufacturing Co.

Meeting At Chicago

Domestic burner manufacturers held a meeting at Chicago preliminary to the St. Louis meeting at which various phases of the problem were discussed.

At this meeting Mr. Bailey stated the opinion that burner manufacturers are going to have to evolve a machine that will burn 20-30 gravity fuel oil if they want to have a dependable fuel supply. As a student of the oil fuel situation he believes cracking will gradually limit the supply of distillates and gas oils.

The burner men had assembled at the Congress Hotel in Chicago at the call of the American Oil Men's Association to work out a system of synchronizing their efforts. It was one of a series of meetings started in eastern cities by Henry L. Doherty, for the purpose of expanding the oil fuel business. Mr. Doherty was not in Chicago, but he was represented by Richard A. Wotowitch of New York. Mr. Wotowitch delivered a short talk and read a paper prepared by Mr. Doherty.

Present Fuel Volume

In his paper Mr. Doherty declared that more than a million barrels of oil is being consumed daily for fuel purposes, and much if not all of it is being used more or less in competition with coal. The paper said in part:

"It is true that a great deal of this million barrels of oil that is now being used daily for fuel purposes is not of a character suitable for house heating purposes with burners now on the market, but practically two-thirds of it either can be used for house heating or can be fabricated inexpensively into a form suitable for house heating purposes. It is well to call attention of the burner manufacturers to the important fact that their burners should be developed so they can use heavier grades of oil."

It was pointed out by several of the speakers that the supply of oil available to household uses would be increased materially by the improvement of burners so they might use heavier oils. Fuel oil is bought by manufacturers in competition with coal on a price basis only. If coal is cheaper (all things considered) the industrial plants of the country will use it, and not oil. But oil fuel has many advantages in ease and convenience, over coal and is therefore better suited to household uses and will sell for home fuel even when coal is cheaper. Thus it is maintained by Mr. Doherty:

"Much oil used in competition with coal is where the user gets no especial advantage over the use of coal, as the household user does. Therefore as the homes of the country demand more and more oil, a slight rise in price will drive more and more of the industrial users back to coal because it is cheaper. As the industrial consumers take up the use of cheaper fuels there will be a corresponding volume of oil made available for domestic use."

Co-operation Needed

Probably no two businesses so mutually dependent have done so little to help each other as the burner men and the oil fuel distributors. From the talks made by some of the speakers Thursday evening it could be seen that there have been cases when the oil men and burner men have given each other active opposition. Mutual misunderstanding has led to widespread public confusion and naturally to drastic and harmful legislation against the use of domestic fuel. Together the two interests can solve their own problems, meet all mechanical and scientific handicaps, and together they can rightly educate the public and get laws enacted that will be mutually helpful. These were the reasons assigned by Mr. Wotowitch, for having the meeting.

The net result of Thursday night's meeting was the airing of a lot of differences, but it resulted also in arranging for another meeting and the appointment of a joint committee of oil men and burner men and allied industries. The committee will hold a

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THIS WEEK'S OIL NEWS SUMMARIZED

Production

(Production News pp. 57-72)

FURTHER decline of the Powell field to less than 125,000 barrels daily and lessening declines in production of California fields, are further whipping the situation into more desirable aspects. The fear that producers would become unduly encouraged and start drilling on large scale seems to date to have been without foundation. With the lesson of the past year in mind, it seems probable that the price will have to be considerably increased to call out much wildcatting.

California's production declined last week by 9000 barrels, on the basis of daily averages. Santa Fe Springs was down 7000 barrels and Long Beach 2000. Torrance was about the same as during the previous week but is certain to show substantial increases soon. The feature of development there the past week was the drilling in of a good producer a mile from production.

The Compton field of California, heralded as another field of fair size, isn't looking so well. Three tests, one within a half mile of the discovery well of the field, which is still the only producer, appear to be failures.

Oklahoma production showed little change over the week. Burbank declined slightly, as did Wewoka, while Tonkawa made a small gain. An encouraging thing in Oklahoma was the decision of Burbank operators to continue the shut-down and some 15 wells which recently were started to drilling, will be shut down.

Tulsa Markets Stronger

TULSA, Dec. 11.—Mid-Continent markets advanced sharply today. Navy gasoline for immediate shipment was scarce at any price and high gravity grades are almost unobtainable for immediate delivery and refiners are refusing to quote for future. Three export organizations are seeking 64-66 gasoline at prices from 8½ to 8¾ cents, have not been able to buy. Gas oil is in better demand. Fuel oil is largely sold up and prices are higher, runnng 80 to 85 cents.

Advanced quotations in Oklahoma today are: 60-62 gasoline 8-8¼; 64-66, 9-9¼; 68-70, 9¾-10¼; all blends 6¼-6½.

North Texas prices: Navy 6¾-7; 60-62, 7¾-8¼; 64-66, 390 e. p., 8½-9; 64-66, 375 e. p. blends 6¼-6½; fuel 75-80.

Flows at 900-Barrel Rate

SHREVEPORT, Dec. 11.—Reports from Webster parish state that when opened for eight minutes yesterday Oil Fields Gas Co.'s No. 1 Merritt, in 14-21-10, flowed through a 2-inch pipe five barrels in eight minutes, or at a rate of 900 barrels per day, of 32 gravity oil. The well was completed at 2,523 feet some time ago as a spayer, making 25 million feet of gas, with the bottom of the hole approximately five feet in the sand.

Financial

(Financial News pp. 100-102)

MORE strength was noticeable among the oil stocks last week. Under the leadership of Houston and Marland, some good sized gains were made. Continuously declining production has been a bullish factor and the impression of better conditions has been further emphasized by the withdrawal of one or two oil companies from negotiations looking to financing.

This factor influenced Marland which made a gain of 4⅝ points on Monday. Houston that day spurted up 5 points and stayed close around its new top for the movement all week.

Of the Standard oil stocks a few of the pipe lines issues continued weak but elsewhere considerable strength was evident. Independent stocks on the curb were firm.

Buys Gasoline Plant

FORT WORTH, Dec. 5.—Chestnut & Smith Corp. of Tulsa has purchased for $205,000 the absorption plant of the Central Gasoline Producing Co. from George P. Gleason, receiver for the latter company. The plant is located at Eliasville, Tex.

A. C. Taylor, president of the Central Texas Petroleum Co. here, bought from the receiver all of the stock of his company, which was formerly the marketing organization of the Central Gasoline Producing Co. There will be no change in the Central Texas Petroleum Co.

Storm Wrecks Derrick

SHREVEPORT, Dec. 11.—Reports from Mooringsport, La., state that a heavy wind accompanying a hard rainfall late yesterday blew down several dericks in Caddo Lake causing damage estimated at $40,000. Five of the wrecked derricks belonged to the Gulf Production Co. and two to the Caddo Central Oil & Refining Co.

Marketing

(Market News pp. 89-102)

MID-CONTINENT gasoline markets remain strong with price of new Navy creeping slowly forward. Little new Navy is now obtainable in Oklahoma under 6¾ cents. Moderate temperatures over most of the country has kept the volume of consumption at a high figure, and many refineries report November sales were as large as September, a situation which is without precedent in recent years. Some improvement also has been noted in the volume of export trade but export prices have been low in relation to domestic prices.

Fuel oil trade is picking up considerably. Railroads have been in the market again and have imparted strength to this product. Kerosene also is firm, considering the country as a whole. A few quarters report some slackening in the demand but prices have been making small but gradual advances.

In Pennsylvania, lubricating oils are still strong as refiners are working on a considerable quantity of recently placed orders. The amount of cylinder stocks available for the open market is small. Buying of neutrals has been fairly good and prices have been steady to firm.

Paraffin wax is another scarce article and eastern refiners have made a small advance in their prices.

Rocky Mountain Runs

CASPER, Dec. 8.—Average daily pipe line runs from the various fields in the Rocky Mountain region for the week ended Dec. 8 showed a decrease of 9,649 barrels. Comparative average daily runs for the weeks ended Dec. 1 and Dec. 8 follow:

Fields	Dec. 1	Dec. 8
Salt Creek	123,910	114,855
Teapot	4,285	4,286
Big Muddy	4,094	3,983
Grass Creek	4,438	3,211
Elk Basin	1,666	1,583
Notches	116	156
Greybull, etc.	33	42
Rock River	3,600	3,500
Lance Creek	3,142	3,019
Poison Spider	883	904
Osage	600	600
Hamilton Dome	510	540
Lander	300	300
Pilot Butte	80	80
Lost Soldier	4,840	4,840
Ferris	100	100
Cat Creek	4,670	4,575
Kevin-Sunburst	shut down	
Miscellaneous	600	600
Totals	157,868	147,174

meeting at an early date and arrange a constructive program for the next general meeting. Then the mutual needs of the two factors in the trade will be classified and the work divided among other committees.

The meeting was called to order by John D. Reynolds, secretary of the American Oil Men's Association, and A. T. Locke, a Chicago oil jobber acted as chairman. Mr. Wotowitch was the first speaker called upon, and besides reading Mr. Doherty's paper, impressed his hearers with the need of co-operation from two or three industries. He suggested that the committee consist of oil men and burner men, and have representation from the building industry, the insurance business and the city fire authorities.

The committee as finally appointed included three refiners, George N. Moore of Moore Refining Co., Homer Johnson of Johnson Oil Refining Co., and Sheldon Clark of Sinclair Refining Co.; three oil jobbers, Charles E. Gauer of Sterling Refining Co., P. C. Crenshaw of Home Oil Co., and Walter Cuneo of Indian Refining Co.; two combustion engineers, W. J. Caveney, a consulting engineer formerly with Sinclair Refining Co., and B. W. Doud of Lynch-Clarisey Oil Co., Charles Whitehair was named to represent the insurance interests. The burner men have not selected their committeemen yet.

Things to Attain

Mr. Wotowitch pointed out that any prospective consumer of oil could get his plant much cheaper if allowance was made for such equipment in the original building of the house. For this reason he suggested that architects and builders be interested in the present rapid growth of the domestic fuel industry. Insurance also, would cost less in many cases if householders realized that precautions against fire hazard could be taken in the original installation.

It is not impossible that town fire marshals may put up difficult obstructions in the way of the burner business unless they are first educated to know how to regulate such things and make them safe without prohibiting their use.

B. M. Oliver of St. Louis, head of the Oliver Oil-Gas Burner Co., said in a short talk, that his out-turn of burners had doubled every year since 1918. This year his factory in St. Louis has turned out 43,000 burners he said, and it will take 50,000,000 gallons of oil to keep all the Oliver burners supplied next year. Mr. Oliver has been making oil burners for 15 years but his experience like many other burner manufacturers shows that the public demand did not begin to grow until after 1918. He estimates it will take five billion gallons of oil to meet the general oil burner demand in the year of 1924.

Leod D. Becker, temporary secretary of the American Association of Oil Burner Manufacturers says the worst enemy to the growth of the domestic burner business is the popular sentence "The oil burner is a coming thing but the eventual efficient burner has not been evolved."

In refuting this statement, Mr. Becker quoted data to show that several oil burners now on the market were more efficient than any other kind of heating equipment. He related the results of an experiment which showed that 80 per cent of the heat created in an oil burning plant was actually delivered and put to useful purpose.

The general practice in the installation of oil burning equipment is to use storage of too small capacity. That point was brought out by several speakers. G. E. Baltes of the Sinclair Refining Co., said the problem of supplying small storage was one of the biggest difficulties his company encountered in Chicago. The item of labor and truckage necessary to serve customers with small storage was sufficient to eat up the profits from the customer's patronage, he said.

Charles E. Gauer, president of Sterling Refining Co., asserted that a margin of 2½ cents a gallon was generally thought to be required to make the domestic fuel business profitable, and that in Chicago at the present time the profit was much less than that. Corroborating what Mr. Baltes had said, he stated that one oil distributor whom he knew had kept a separate account of business with customers having 50- gallon storage and smaller and that such accounts had averaged the jobber a loss of a half cent a gallon.

William J. Caveney, the consulting engineer, related that he recently took occasion to watch a tank wagon crew of a Chicago oil jobber make a delivery. The crew was obliged to connect up two strings of flexible hose and two joints of iron pipe in order to deliver 50 gallons of distillate to a customer's basement, consuming 25 minutes in the operation.

Mexpet Club To Hold Ball

NEW YORK, Dec. 8.—Wednesday evening the Mexpet Club, which is composed of the employes of the Mexican Petroleum Co. and its subsidiaries, will hold its annual dinner-dance at the Commodore. Among the guests of honor are expected to be Mr. and Mrs. E. L. Doheny, and Mr. and Mrs. Herbert G. Wylie.

Most of the officers of the company wil be present and it is expected that the majority of the managers from the eastern district stations will take part in the entertainment. Novel features will be introduced by company talent.

The new officers of the club are: S. W. Chambers. president; F. S. Golden, treasurer; Miss B. Boylan, secretary. W. A. O'Neill again will be in charge of the entertainment.

Big Deals Are Rumored At Institute

Staff Special

ST. LOUIS, Dec. 11.—Most discussion at the opening of the American Petroleum Institute meeting today centered around the numerous deals said to be pending for consolidating or taking over or strengthening various of the larger Independent interests in the Mid-Continent fields, and also in some cases providing funds for these interests to store crude at the present price level.

Most talk concerned a meeting of a half dozen heads of the bigger Independents at the Drake hotel, Chicago, Nov. 28. There is no direct confirmation from any of those present but the story of it is now quite generally known.

There is some confusion in the talk as to just who was present and how the meeting originated. The story most in circulation is that W. G. Skelly called it to discuss some pooling arrangement of crude oil production on which a big sum of money could be raised quickly and that there were present Harry F. Sinclair, J. S. Cosden, Frank Phillips, E. W. Marland and James J. McGraw, the latter of the Exchange National Bank of Tulsa.

The idea of some crude pooling arrangement has been credited to Skelly for some time. It is said to have met fairly favorable reception at this meeting as a general proposition but it was finally decided to let the matter ride and think about it.

In connection wtih the meeting is talk that some of the bigger companies needing ready money to swing their crude requirements and carry their unsold stocks of products have gotten or are arranging to get financial assistance from various of the larger and strongly financed oil companies. In this connection is the story that the Standard Oil Co. of New Jersey has lent one of the Mid-Continent group of Independents somewhere up to $15,000,000 to keep the Roxana interests from strengthening their hold in this country and that the New Jersey company is determined to pursue that policy further if necessary to keep foreign capital out.

The company said to have received this loan had a deal pending with a big New York banking house it is said, whereby it was to have issued $15,000,000 of notes and sweetened the deal by turning over to the bankers a large block of its stock from the treasury at a price a bit under the market. The bankers thought the deal was made and sold a lot of the stock running it up some $10 a share before discovering that the deal was off. On its failure, the bankers had to buy enough of the stock on the open market to fill commitments.

Talk will not down that there are more deals pending between the Prairie Oil & Gas Co. and various Independent operators but opinion seems to be that the alleged deal with Cosden has fallen through.

How Two Industries Can Co-operate

A Symposium Before The Group Session On Utilization Of Petroleum Products Annual Meeting American Petroleum Institute, St.Louis, Dec. 12

By G. I. Sweney,

President Sweney Gasoline & Oil Co., Peoria, Ill.

I WOULD divide the consumption of fuel oils into three groups; viz., (1) Industrial fuel; (2) Fuel for public buildings, and (3) domestic fuel.

To a certain extent the use of oil in industrial plants and by railroads and steamships is fairly well developed, and is being successfully handled, and is absorbing that portion of the crude for which there is little other use, and from an economic standpoint is working its way without hindrance and with satisfaction. Therefore, I shall give scant attention to this phase of my subject.

Of the second group, it may be said that fewer problems present themselves for solution than in the third group. Hotels, and apartment houses, office buildings, schools and other public buildings require comparatively large heating units, take larger deliveries of fuel, and can be operated at a lower expense and on a more businesslike basis than can the home.

Inasmuch as the large unit can stand the cost of preheating the fuel, lower grades of oil can be utilized than in the detached house. In many cases, the larger units have storage facilities in which oils with moderate cold test can be used and in which the oil will keep limpid without preheating.

For such service—which is confined almost entirely to cities, the problem is not difficult, but first, consideration must be given to the expense account, and the successful oil operator will work out all possible economies of operation of plant, transportation and delivery by the use of adequate and properly equipped storage, by the use of motor trucks of large capacity, and suitable pipe fittings and with the help of the customer convenient and accessible arrangement of domestic storage.

Problems of Domestic Heating

While the use of oil for domestic or home heating possesses greater possibilities for further development than do the other two groups mentioned, it also carries with it greater obstacles, and it is here, it seems to me that a closer coordination of effort of the oil and burner industries is necessary.

Expense of oil burning equipment and oil may not be important after once installed and in use because of the greater comforts enjoyed, but the average householder should not be misled when negotiating for equipment as to what his heating expense may be.

I have found an almost universal tendency among oil burner salesmen to make prospective purchasers believe that the very cheapest of oil can be successfully used, figures as to oil costs being used which are actually carload costs at refinery (no mention being made of freight, cost of delivery or profit for the handler) so that the oil marketer is constantly on the defensive as to his price and the quality of oil necessary.

No matter how near to perfect may be the machine for burning oil, the matter of first importance is the cold test of the oil. Without preheating arrangement in consumers' storage tanks, the oil must run from storage exposed during the winter to low temperature and must still flow to the burner. Preheating is too expensive for the average household, and insurance regulations and common considerations of safety prevent storage of more than limited

By E. P. Bailey

Association Oil Burner Manufacturers

FOR our present purpose, users of oil as fuel may be classified in three groups: First, those in which oil as fuel is practically indispensable, such as the making of illuminating gas and marine transportation; Second, those in which oil as fuel is very advantageous, though not indispensable, such as glass making, heat treating furnaces, open hearth furnaces, etc.; and Third, those in which oil can be used advantageously but where other fuel can be made to serve equally well, as in steam boiler furnaces, brick kilns, household heating furnaces, etc.

In the first class a sort of cooperation has for years existed between the oil industry and the oil burner manufacturers, in that both of us, in seeking a sale for our products, have met the same consumers, and have become mutually and helpfully acquainted.

In the second class, this cooperation began to fade away. The equipment manufacturer found himself alone in all his missionary and development work, and the oil man came along only when he was called.

In the third class, the oil burner manufacturer, far from receiving cooperation from the oil industry, encountered its active opposition. With the exception of a brief period between the spring of 1918 and the fall of 1919, the attitude of the oil industry has consistently been that of opposition to the extension of the use of oil fuel. After the equipment man has won his prospect to an oil burning advocate, the oil man needed only one opportunity to kill him off. The oil man's great weapon was, "No continuing supply."

We started our own investigation of the general subject of oil fuel supply, personally calling on geologists, producers and refiners from the Atlantic to the Pacific. We decided not to go out of the oil burner business. That the biggest oil companies in the world would not be contracting for tank steamers by the dozens if the game was up; that level headed oil companies would not be buying 1200 acre tracts for the erection of new refineries unless there was a reasonable certainty of the growth of the business.

But what did the attitude of the oil industry do to the prospective customers of the oil burner manufacturers? I think it would be safe to say that from December, 1919, to January 1922, the use of oil as fuel did not increase ten per cent, if marine work is excepted. The trade journals of the petroleum industry were quoted by the newspapers and other trade journals in saying that oil as fuel was a thing of the past. Even plants which had equipped themselves for burning oil prepared themselves at great expense to turn to other fuel.

But these are items of past history, even though recent history. How about the present? How long ago would you guess that these sentences appeared in an editorial of a leading journal of the oil industry? "The campaign for extending the use of fuel oil for heating purposes is growing without any special effort on the part of the oil industry to encourage it. On the contrary, some have even tried to discourage it as undesirable and disturbing to other markets. * * *Farsighted students of the development of oil uses are much less concerned about the temporary overproduction than about the shortage of tomorrow." Your guess may

be right, but I doubt it. That was in the issue of October 25, 1923.

Attitude of Oil Industry

What can the oil industry do for the oil burner man? Possibly the oil burner man might say first: "Adopt a different attitude toward the information which you supply to the public. If you must speak of a possible shortage of fuel oil in the dim days of the future, don't say that you are in possession of the gospel truth and that the fuel oil will all be gone in six months or six years. Maybe you don't know. So far it has generally worked out that the Creator has given us great supplies of all natural resources, enabling us to find them as we need them.

The burner man might say next: "Act on a new inspiration, and supply yourselves with sufficient equipment to deliver your product where and when it is needed." He might say third: "Join in determining proper grades and classification of oils for various types of oil burning apparatus.

What can the oil burner man do for the oil industry? We can enable you to sell for fuel any petroleum product for which you have no better use, from kerosene to the residue from your cracking still. We can lead your salesman to live prospects and work with him to bring them in. We can help you to balance sales with production and prevent the accumulation of unwieldy quantities of some of your products which prevent the production of others.

What can we both do for the public? The answer is too large for my paper but I would suggest that we both read again Mr. Doherty's Atlantic City address.

(Sweney Article Continued)

quantities in warm basements, so that oil must be supplied which has a cold test not higher than 10 or 15 degrees above zero except in climates where there are no low temperatures.

Sediment Causes Trouble

Of second importance is freedom of the oil from sediment. If feed lines of burners clog and the oil is not delivered to the fire box, the whole proposition falls.

A flash point of around 200 degrees Fahr. is desirable as precaution against fire or explosion.

Burners are being built which will handle oils of as low as 18 degrees gravity Baume, but I have become convinced that the only practical grades are what are known as overhead fuels, that is distillates ranging from 32 to 38 gravity, having the requisite cold test freedom from sediment, and flash. The efficiency of liquid fuel is so well recognized when compared to cold that I consider a discussion of the heat value of minor importance.

The oil should be comparatively free from sulphur. A disagreeable odor from combustion of oil will form a great resistance to its use.

Dependable and prompt service is of utmost importance. No business can long stand up under the strain of complaints due to lack of service. The business of delivering oil must be worked out carefully and systematically as possible and deliveries made with neatness and dispatch.

We are handling a "back door commodity" and the reputation of many an oil merchant has been ruined around the dinner table or across the bridge table by his failure to keep some customer supplied, particularly at the time when that customer has forgotten to anticipate his requiremenets.

Care in Delivery

Care in delivery is essential. A little oil spilled on driveways, shrubbery or lawns, will bring a storm of complaint. In my business we have provided drivers with a canvas sheet to be placed on the driveway or lawn so that no oil will be spilled on the premises.

It would be of great assistance to the oil industry if burner manufacturers could prevail upon consumers to install intake pipes at the street curb, or at least so that the intake could be reached without going on to the driveway or premises of the consumer. A heavy truck on a concrete drive is liable to break up that drive, and then comes complaint and perhaps an expensive replacement.

Except in large centers, the oil merchant can hardly afford to handle furnace oil exclusively. Therefore, he may properly figure that the furnace oil business is merely an added line to the already existing business of selling gasoline, kerosene and lubricating oils.

But, nevertheless, his equipment and service must be adequate else he will injure his business in the established lines by failure in the new one. He must, of course, provide storage sufficient to serve beyond question those who are dependent on him for their comfort. Happily such storage can be used for his other departments in the summer when the demand for furnace fuel is limited.

On Handling Burners

Conservative business management is just as essential in the oil business as in any other. The experienced oil operator will make a good share of his profit by keeping out of trouble—by avoidance of starting something he is unable to finish—by promising only what he can do.

Some oil dealers sell and install oil burners. Is that good business? Work the proposition out before you tackle it. What about assuming responsibility for the successful operation of the burner itself? How about the competition of dealers selling other styles of burners which competition will be against your oil also?

Think of the cost of selling, installing and maintaining those burners. Can you make enough money on the burner so that it will pay its way, without robbing your margin on the oil? Have you conditions peculiar to your own situation? Are they in favor of your selling burners? Think—question yourself.

I have always thought that a man is under a great handicap when he tries to deal in something he knows little about. After all, experience and knowledge are important factors in any business. Therefore, I like to believe if I am an oil dealer, I should sell oil and leave other articles of trade to someone whose regular business is selling those articles.

The Future

Looking into the future, it seems safe to assume that for many years to come the demand for gasoline will keep pace with or exceed the supply. A similar vision of the use of the heavier portions of crude oil (let us say below 28 degrees gravity) also indicates that for industrial purposes there will be no oversupply.

How about that portion of the crude which may be adapted to heating the home? May not its use be developed to a point where it will occupy a position of relative importance with gasoline? May not a price be obtained sufficient to pay all costs plus a reasonable profit? Will not the consumer be the real beneficiary through added comfort and convenience?

The burner people may reap a rich harvest—every home is a prospect, but none of us can succeed unless we each contribute our full measure of service and effort—striving fairly one with the other in a broad gauge spirit—a carefully thought out plan—and a strict adherence to clean business ideals.

Nebraska Jobbers To Meet

OMAHA, Dec. 6.—The Nebraska Independent Oil Men's Association will holds its annual meeting in Hotel Rome, Omaha, Tuesday, Dec. 18. Speakers are to be L. V. Nicholas, president, Natonal Petroleum Marketers Association, and Warren C. Platt, **National Petroleum News.** Officers of the association are: L. L. Corvell, Sr., Lincoln, president; G. A. Steele, Manhattan Oil Co. of Nebraska, Omaha, vice-president; and Charles M. Sutherland, Omaha, secretary-treasurer.

Indiana Jobbers Meet

EVANSVILLE, IND., Dec. 7.—A meeting of the Indiana Independent Petroleum Marketers Association will be held on Wednesday, Jan. 23, at Hammond, Ind., Frank C. Enz, president of the association, announced.

Arrangements for the meeting and entertainment will be in charge of Harry J. Kennedy of the Marland Refining Co. station at Hammond.

The Burning Of Fuel Oil In Railroad Locomotives

By J. N. Johnston
Fuel Agent M K & T Railroad

Presented Before American Petroleum Institute, St.Louis Dec. 12

DEPENDABILITY and regularity of supply are, of course, first considered by a railroad contemplating the use of oil as locomotive fuel. Contracts for such a supply, running for a sufficient time to warrant the expenditure necessary to equip the road to burn oil must be secured. In 1919 and 1920 southwestern railroads were generally unsuccessful in efforts to contract for domestic fuel oil in sufficient quantities to meet their requirements and for a period of more than a few months at a time.

The situation has changed materially since the summer of 1921, and several fuel oil contracts have been made by railroads, to run for three years, with a sliding scale of prices to advance or decline as the posted price of crude advances or declines. Southwestern railroads have, therefore, contracted for a supply of domestic fuel oil, which is available for railroad use, in addition to that contracted from other sources.

The changed condition as to supply has simply resulted in increased use of fuel oil as locomotive fuel in the years 1920, 1921 and 1922.

This fact indicates positively that, if the southwestern railroads now burning oil as locomotive fuel were compelled to rely on domestic sources of supply, it would be but a short time until some of them would be forced to discontinue the use of oil.

This would, unquestionably, result in a tremendous increase in railroad operating expenses, for the reason that most of the lines now burning oil are so located with reference to coal production, as to necessitate a long rail haul from the mines with an attendant high cost of coal at fuel station. These lines, however, may, under present conditions secure Mexican oil on their own rails at tidewater or from domestic fields and thus reduce fuel costs.

High Priced Coal

High priced coal, together with its cost of transportation from source of supply to point of consumption, has been an important factor in influencing the change from coal to the use of oil as locomotive fuel in the southwest and on the Pacific coast. Excessive fuel costs also have been an important influence toward high transportation ratios in these sections. Action which would disturb the present railroad fuel situation in the southwest would be particularly unfortunate at this time, when the necessity for reductions in railroad expense is so generally recognized.

Some of the larger oil companies, with new processes of cracking fuel oil for a greater yield of gasoline and other by-products, may cut down, in some sections of the country, the supply of fuel oil for locomotive use, and, with this thought in mind, the consumption of the lower grade of fuel or crude oil yielding little, if any, by-products, should be encouraged for the use of railroads that have no coal reserves on or adjacent to their lines, or that have to use it for economic reasons, viz., high cost of coal.

Just what the future of the refining industry is to be is a matter for time to tell. Therefore, in viewing the future supply of fuel oil for railroads, especially that secured from high gravity crude, serious thought and assurance should be given by the American Petroleum Institute to the railroads for a dependable supply.

It would indeed be fortunate if a governmental body, working in conjunction with the American Petroleum Institute, were authorized to supervise the conservation of our petroleum resources insofar as they apply to the needs of the individual railroad or industry. A comprehensive survey by such a body, after taking into consideration the geographical location of coal and oil producing territories, would determine which fuel should be used in order to serve the public interests economically and to conserve the fuel supply for future years.

In the accompanying paper, which presents in more detail than has ever previously been published, the many phases of railroad operation in which it is possible to make savings by the substitution of fuel oil for coal, Mr. Johnston relieves the oil industry of the burden of selling the railroads on the superiority of oil over coal, by selling the idea himself. In fact, it would be hard to think of a more effective selling talk for fuel oil from the standpoint of the refiner than Mr. Johnston, who is a recognized authority on fuel in connection with railroad engine operation, gives.

Mr. Johnston also makes it plain that if the use of fuel oil on the railroads is to be continued and extended, the oil industry must give the roads assurance, first of a dependable supply over a period of years that would justify the building of storage and the changing over of engines, and second, that the price will be stabilized to an extent that will eliminate the wild fluctuations that have marked the fuel oil market in recent years—Editor.

Advantages of Burning Oil

A railroad contemplating changing from coal to oil must first have a careful analysis made of all of the costs that enter into the change and should bear in mind that, in order to secure maximum results and efficiency from the use of oil, all locomotives and stationary plants in the territory in which conversion is to take place must be changed.

In other words, full benefits cannot be derived from the use of oil unless the program contemplates that the change be made 100 per cent. If only a portion of the number of locomotives in service on a division or district were changed, roundhouse expenses could not be materially reduced; this item makes for a larger portion of the economies.

Cost of Coal and Oil at Source

Our experience shows that 3½ barrels of fuel oil, or 1088 pounds, are equivalent to 2000 pounds of coal. The item of expense of coal and oil does not always depend upon whether the change from coal to oil should be made because the relative price of one ton of coal, F. O. B. the mine, or its equivalent of 3½ barrels of fuel oil, F. O. B. the refinery, is the same.

In making investigations for some railroads, I found that the cost of coal at the mine was less than the cost of its equivalent of fuel oil at the refinery, yet, in the final analysis, the adoption of fuel oil created a saving on account of other economies.

Cost of Transportation

In computing freight haul on either coal or oil from origin to point of consumption, tariff rates must govern when moved over foreign lines and actual cost

of moving over home rails. That an amount of fuel oil capable of doing the same work as its equivalent in coal can be transported cheaper is illustrated by the following.

We will assume that a railroad consumes 1,000,000 tons of coal annually and the average miles hauled on home rails was the same for coal or oil. Equating 3½ barrels of oil to one ton of coal, this consumption is equivalent to 3,500,000 barrels of fuel oil, or 543,-900 tons. The net weight of a modern empty tank car is practically the same as the net weight of a modern coal car On basis of a net load of 50 tons to the coal car, it will require 20,000 cars to handle 1,000,000 tons of coal, while 14,-700 ten thousand gallon tank cars will be required to handle this equivalent of oil. Therefore, when using oil fuel, a saving will be effected in the hauling of 456,100 net tons of company fuel annually, elimination of this extra haul a large factor in reducing transportation expense.

Depreciation of Coal, Source to Locomotive, and Saving With Oil Due to Control of Consumption

In a report which was made on the Missouri, Kansas & Texas Railway of Texas, before the conversion of this road from coal to oil, it was stated that coal in the first 24 hours after it leaves the mines will depreciate 2 per cent on account of evaporation of the moisture it contains. Investigations heretofore made show that the average 100,000 capacity car, in addition to running 2 per cent short account evaporation, will average 1000 ponds additional shortage on account of discrepancies in tare weights mine weights, etc. There are further losses due to theft and loss in transit. No figures are available to show just what coal losses through deterioration in handling and through storage, but it has been thoroughly established that every time coal is handled or moved it loses heat producing value. Various authorities have agreed that there is an average loss equivalent to 5 per cent between the mine and the locomotive due to the causes above enumerated.

Another factor in the consumption of fuel is the consumption in non-tractive effort. Dr. W. M. F. Goss, who is perhaps America's foremost fuel expert in Bulletin 402 of the United States Geological Survey, states that of the coal consumed by railroad locomotives in America approximately 20 per cent is consumed in non-tractive effort, i e. in starting fires, in moving locomotives to train and in keeping the locomotives hot while standing; further, that approximately 10 per cent is lost in cinders and sparks, and that approximately 2½ per cent is lost through unconsumed fuel in ash. In fact, that only 45 per cent of the fuel consumed by locomotives is utilized—represented by heat transmitted to water to be vaporized. Many of the causes of this loss are, of course present in an oil burner, but the total losses over 20 per cent will not apply to oil burners.

All of these factors considered, it is certain that a very large portion of the coal consumed by railway locomotives is lost and that the use of oil overcomes this loss to a great extent. Oil reaches the locomotive unimpaired either in quantity or quality. There is no loss whatever in transit through evaporation, theft, loss or deterioration. Economical consumption is more easily procured. In an oil burner you can while standing, reduce your fire to the finest point or increase it to the maximum, and at least one-half of the consumption while engines are standing on side-tracks or waiting at terminals, etc. may be saved when oil is used. Considering these various points, we may safely assume there will be a saving of at least 10 per cent over coal due to the various causes enumerated.

Cost of Handling Coal and Oil

The cost of handling coal will average, conservatively, 20 cents per ton while the handling of its equivalent in oil may be accomplished for $.0525, or a decrease of $.1475 per ton in handling oil versus coal.

Cost of Handling Storage Coal

It is the practice of coal burning roads to store a large amount of coal through the summer to carry them over the fall and winter period, in order to avoid car shortages, mine strikes and transportation disabilities. The handling of storage coal costs more per ton than that used currently due to excessive labor costs unloading and reloading, interest on the investment, losses incident to deterioration and fires due to spontaneous combustion and the fact that special tracks have to be temporarily built to take care of this storage. This is an item that does not apply to oil burning roads and should be taken into consideration by railroads in making their analyses when desiring to change from coal to oil.

Cost of Firing Tools

The expenditure for this item on coal burning roads in the nature of purchasing scoops, coal picks and firing tools of all kinds, is eliminated by roads using fuel oil.

Enginehouse Expenses

The ease with which oil burning engines may be turned and the small amount of work on them at enginehouses as compared with coal burners is well known. The fact that oil burning engines are run greater distances without roundhousing is a large factor in decreasing enginehouse costs. An oil burning engine should be turned in 20 per cent of the time it takes to turn a coal burner and at an average cost for roundhouse expense of half the cost to turn a coal burner. Therefore, enginehouse expenses should be reduced on a conservative basis of 40 per cent of the present cost in coal.

Any expense in kindling fires in oil burning locomotives is nominal, as they are usually started with greasy waste. In coal burners some roads still use wood, others wood shavings and oil to fire up, which expense is not applicable to an oil burner.

Locomotive Repairs

The question of increase in locomotive repairs on oil burners is one that has been under discussion for many years and there has always been a wide difference of views on the subject. I have seen estimates of the increase which range from nothing to as high as 45 per cent. On the Missouri-Kansas-Texas Lines we have found no additional cost in maintaining oil versus coal burning locomotives. In considering the subject however, one point has apparently always been lost sight of and that is the effect the increased efficiency of oil burning locomotives has on the locomotive repair question.

If a road finds that it gets an increase of 10 per cent in the tractive efficiency of its locomotives through the use of oil, to handle a given tonnage, 10 per cent less oil burning locomotives are required. Manifestly, the locomotive repair cost per 1000 gross tons handled would be very little higher on any given road than with coal burners. In the practical working out of this, however owing to the influence of passenger service, branch line traffic and other traffic where locomotives cannot handle their maximum, maintenance of oil burners would probably show at the end of the year, on the same volume of business about equal with coal burners.

Cost of Equipping Locomotives for Oil

Roads which have changed coal burning locomotives to oil burning have found the cost to be from $1,850 to $2,022 per engine; large freight and passenger engines costing, for labor, $882 material, $1,131; smaller power and switch engines, for labor $405, material $752. The above costs include removing button head radial stays and applying the taper riveted head stay. It is estimated the average railroad can change its locomotives from coal burners to oil burners for $2,000 each.

Plowing Fire Guards

Plowing fire guards along the right-of-way on a coal burning road is eliminated where oil is used. This figure will represent an expenditure of approximately $3 per mile.

Payments of Claims Account Fires Set Out By Locomotives

Fires would be reduced to the minimum if oil were used, but so long as fires occur along the right-of-way or adjacent thereto, they will be attributed to locomotives, if coal burning, but cannot be charged against an oil burner.

Increase in Efficiency of Locomotives

Increase in efficiency is estimated to range from 5 per cent to 25 per cent.

(Concluded on page 30)

Harmonious Industrial Relations Needed In Oil Business

By L. V. Nicholas
President, National Petroleum Marketers Association

Delivered Before American Petroleum Institute

THE need for harmonious industrial relations is universally recognized.

In the development of harmonious industrial relations we must studiously avoid extremes. It has always seemed to me it is the very simple, ordinary things we are overlooking which furnish the full and complete solution for our industrial troubles, while we frantically search for something involved and complex, obsessed with the idea that the simple, homely and apparent things to do, cannot possibly furnish the answer.

Over one half of our troubles are the direct result of the personal attitude of men who should function impersonally. Personal grudges and personal disagreements over the matter of filling station differentials; the policy of giving away pumps and tanks; the paying of premiums for crude; off-set drilling and other differences of opinion, too numerous to mention, are the cause of bitter and relentless industrial warfare, while the invested millions in the industry are called on to foot the bill.

Harmony Is Desired

One of our greatest thinkers has made this statement: "The organization or individual who cannot face criticism without getting mad, is incapable of functioning constructively."

Is it not a fact that in this big industry of ours, we have all gotten mad too easily? The organization I represent has a great many ideas and ideals we would like to put into practice. We have a very keen and sincere desire to work in industrial harmony with our competitors, great or small. We believe in talking straight and talking fearlessly and we believe this great industry of ours has everything to gain and nothing to lose by making a very earnest and a very sincere effort to establish a spirit of toleration, which is absolutely the first and most important step in the establishment of harmonious industrial relations.

The group in the industry to which I belong have for some time been endeavoring to bring it about through the establishment of associations—city, state and national.

We confidently believe that meeting together as members of an industry, getting acquainted and discussing our problems is a highly important and necessary function.

The Chicago Conference

Despite much misunderstanding, our national conference of oil men at Chicago during the past summer was the first step in the right direction. Producers, refiners and jobbers left Chicago with a much clearer and better view of one another's problems—it was of outstanding value as a beginning.

We must get rid of the idea that we need to fear the truth. While our dissemination of information during the past year or two may not have been perfect it has been to the right end—it is the half truths that hurt—and while neither truth nor silence will stay an economic fact—industrial discussions may avert our committing an economic error.

Both the public and our industry gain from such meetings and we have nothing to fear from alleged loose talk—loose talk is like any other loose thing—it is soon lost in the dust along the roadside and something sound and constructive takes its place.

The particular organization or group which I represent went on record many months ago as believing it would be infinitely better to step out in an earnest fearless endeavor to accomplish something and risk the possibilities of criticism rather than continue the course we were then pursuing—doing nothing—saying nothing—even thinking in whispers while the public whom we serve were daily growing more suspicious and more resentful of our industry as a whole.

Our industry has four great separate and distinct sub-divisions; producing, transportation, refining and distribution, and I sometimes think a fifth, which should be called the patent division. All of these great divisions may be integrated as they are in many of the larger organizations, and yet every one in itself is a distinctly specialized business and it is next to impossible to visualize any kind of harmonious industrial relations being established on a permanent basis, unless even in the integrated companies, these great divisions set up a segregated accounting system which will permit each and every one of them to show a proper and adequate return on the capital invested in that particular branch or sub-division, and this accounting system should show proper charges for overhead, depreciation and all other usual expenses. exactly as they would be handled if that department were a complete unit in itself.

Accounting should be so handled that misunderstandings, charges of manipulation and bad faith would be made practically impossible. The corpse of legitimate profits which bled and died in bloody battle with bad management in one department, should never be interred in the consolidated balance sheet without a properly constituted "post mortem."

No Question As To Profits

No one can properly question the right of any one of these divisions to make a proper and adequate profit—and by profit I mean net profit after setting up all proper safeguards in the line of depreciation, depletion etc., but there can be a very proper question raised concerning the propriety of drawing on the earnings or profits of one's division to offset the losses in another division, particularly if the losses are the result of uneconomic and unsound functioning in that department.

It is needless to state to such a representative group of men as are gathered here that our industry at present is suffering from overcompetition in production, in refining and in distribution; competition which is so keen and so overdeveloped as almost to preclude personal friendships between men in the oil industry who come into personal competition, one with the other, and yet in spite of this overcompetition, whose very keenness has developed bitter personal animosities and strife, we are constantly pilloried, constantly investigated and at all times suspected of being something else by a skeptical public.

The dramatic bitterness of our price wars is considered by many as pure

Must Be Allies

"Whether we like to acknowledge it or not, every branch, every division of this industry eventually fries in the others' fat.

"None of us can successfully hold aloof on the theory that the other fellow's troubles are not ours and no one gains any permanent advantage as the result of the frying process, not even the public.

"Every day it is becoming more apparent that we cannot afford to be anything else but industrial allies, although we **MUST** remain active business competitors and the competition must be of the kind the public will consider adequate and comprehensive"—L. V. Nicholas

scenic effect. The bitter and remorseless fight for crude oils has made multi-millionaires out of land owners, (the honest farmer, if you please), at a fabulous industrial loss.

Most men engaged in industrial accomplishments are held, not by the monetary rewards (although we will concede they are highly important), as they are by the love of accomplishment, which is more satisfying than to excell in any known line of sport, and yet in those things which we consider strictly games of sport, we have our rules for behavior which bar every kind of unfair advantage and give honor and praise to skill and true sportsmanship.

Is it not about time for us to bring some of these rules of conduct into the oil business, and can we not all gain by so doing?

Harmonious industrial relations should give us time and opportunity to sit down with a pencil and paper and figure things out and make less demand on our imagination.

Fears Without Foundation

Any impartial analysis of our troubles up to date cannot ignore the fact that a very large portion of our time and energy has been spent in safeguarding ourselves against aggressions and advances of one kind and another, which our imagination pictured as vivid reality, when pencil and paper, plus personal acquaintance and a habit of talking things over as industrial friends, would have proven our fears were without foundation.

We work too much alone.

To give you two immediate examples: at Detroit we have a destructive, bitter and uncalled for price war. Gasoline is being sold, not at anything resembling cost plus a reasonable overhead; it is being sold at cost minus. Two of the principal parties to the war each of them splendid types, have been competitors in Detroit for over 16 years and up to within 10 days ago, had never even met or spoken to one another. At Columbus O., while attending a state meeting of Independent oil jobbers recently, we uncovered a destructive condition existing in Akron, I believe, and both parties to the controversy met for the first time at that meeting and to their mutual surprise and delight, discovered both were white men and neither wore horns.

The exact duplicate for this can be found in every division of our industry and in every state in the Union, and it is certainly nothing to be proud of.

Almost Brings Bankruptcy

Inharmonious industrial relations have almost brought our industry into complete bankruptcy so far as public confidence and respect are concerned, to say nothing of our financial difficulties, and all because we have been so busy being "independent" of one another and so "stiff necked" in our opinions concerning the difficulties or impossibilities of harmonious industrial relations that we have not attempted the first steps in that direction.

Col. R. W. Stewart has repeatedly made the statement in his public utterances that "the thought of monopoly is repugnant to the American people"—to which I would like to add—"therefore, all of us should aim to support that which will most convincingly demonstrate to the public that there is an adequate, intelligent and comprehensive competition."

We must not only sell service and personal satisfaction, but we must clearly and distinctly sell the idea and thought that our competition is basic and not open to deep-seated suspicion and sub-conscious public contempt.

It is the under-lying distrust regarding the genuineness and the adequacy of the competitive situation which reacts to our disadvantage and results in investigations, in regulatory laws and hurtful suspicions.

Harmony is Close By

The machinery for the establishment of harmonious industrial relations is immediately at hand. Nothing but the spirit is lacking. We have this great institute, as well as refiners' organizations and jobbers' organizations, but, let me repeat, up to date *the spirit has been lacking.*

There are plenty of explanations and reasons for this; some of them good and some not so good. What has gone on in the past should be considered as "Water that has gone over the dam" and be forgotten, but until we get over our hateful suspicions, one of the other, we cannot justly resent public suspicion of all of us. We need to develop a feeling of industrial Brotherhood.

Pressing Common Problems

We have many immediate and pressing common problems; problems we should work out as an industry—not as group or competitive subdivisions of that industry.

Fuel oils should be developed and improved and marketed in volume and at prices just as satisfactory as those obtained for gasoline. It is ridiculous that our fuel oils and distillates are sold at a loss because a great industry with billions of invested capital cannot or will not intelligently co-ordinate and co-operate.

Personally, I have been interested in oil for domestic heating for over 15 years and I know that distillates can successfully compete with coal at prices that will average fully 75 per cent more than we are obtaining for these distillates today, and yet we are bleeding our industry white because we term these things "by-products" instead of recognizing them for what they are—essential necessities, for the production of which we should be just as definitely running our refineries and adapting our processes for their production as we ever have done for the production of gasoline or lubricating oils.

There are several great and important problems which harmonious industrial relations will greatly aid in solving, if it does not furnish the full and complete answer.

For instance, the patent process tangle has always seemed to me a matter for harmonious industrial solution rather than a problem to be adjusted between Shylock and the Judge.

Please pardon me here for stepping out of my role of jobber in an effort to express a view a great many of us hold who are in the jobbing divsion; the entire industry might be better off and the public better served if we had a patent division or pool into which every worthy refining improvement was put and into which pool the various refining organizations paid a royalty for the use of whatever patent or combination of patents they adopted. This would not only tend to more completely develop and improve refining methods, but it would guarantee proper and adequate rewards to the patentees and pay these rewards, based on the industrial value of the patent and not based on its appraisal as a deadly industrial weapon.

Another great and important problem which could and would be answered as we develop harmonious industrial relations is publicity—public education—regarding the oil industry—and no pains should be spared in an effort to bring about some form of co-ordinated industrial publicity.

Destructive Competition

Court rulings or public belief that competitors must be at one another's throats all the time in bloody commercial conflict, is a relic of a barbarous past.

I am not suggesting nor proposing any Utopian or sentimental ideas or programs, but until we have exhausted the commercial and industrial development of our industry, we should have no time to spend in misunderstandings.

Competition has no more right to be defined as "hell' when applied to our business relations than the same word would have when applied to any form of clean competition in sport or intellectual debate.

The organization which I head is primarily a jobbing organization. We depend for our profit on the margin which exists between the price we pay our refinery source of supply and the price at which we sell to the consuming public direct or obtain from our re-sales agents, who in turn sell direct to the consuming public.

Economically, we are just as essentially a necessary branch of the industry—just as definitely producers in the full meaning of the word, as is the producer of crude petroleum, "the operator of pipe lines," the refiner or the manufacturer.

Strength in Individuality

The strength of the jobber lies in his personally owned and personally conducted business.

Our function is a business in itself and it is our specialized development of the sales and marketing machinery—it is our careful study of over-head and marketing efficiency, which acts as a check and a safeguard to the natural tendency of advancing costs and advanc-

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Bulletin E-19

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The Insulation of Oil Storage Tanks

EVAPORATION losses in storage make serious inroads on the profits of the oil producer, refiner, and marketer. Refinery equipment, such as stills, is carefully guarded by insulation against heat losses by radiation from the walls and tops. Yet comparatively little attention has been given to the insulation of storage tanks, although the direct loss of marketable product in storage is much more costly than the radiation loss from refining equipment, and some of the same methods of insulation which can be applied successfully to heated equipment can be used in connection with storage tanks.

In tests to determine the actual magnitude of evaporation losses and the saving due to tank insulation, widely varying results have been obtained.

Causes of Evaporation

Transmission of heat from the outside atmosphere is the primary cause of evaporation losses from oil storage tanks. If the contents can be maintained at a uniformly low temperature regardless of climatic conditions, evaporation can be reduced and almost eliminated.

Losses in storage may be itemized as follows, for both crude oil and gasoline:

1. Leakage of tanks.
2. Breathing of tanks.
3. Evaporation of the volatile hydrocarbons, the most valuable constituents; these losses are accelerated by
   a. Open storage.
   b. Wind.
   c. Increase in temperature of the surface liquid or

How to Reduce Evaporation Losses

Transmission of heat from the outside atmosphere is the primary cause of evaporation losses from oil storage tanks. If the contents can be maintained at the uniform low temperature regardless of climatic conditions, evaporation can be reduced and almost eliminated.

"The Insulation of Oil Storage Tanks" considers the losses from oil storage tanks, treats of the fundamental requirements of insulating construction, and gives complete specifications and drawings for insulating all types of tanks used for the storage of crude oil and gasoline.

Sent free to oil producers, refiners and marketers. *Write nearest office for Bulletin E-19 or mail the coupon.*

PRACTICAL RESULTS OF TANK INSULATION

Actual installations based on the preceding specifications have shown the following definite results:

1. The contained oil has been maintained at a constant temperature governed by the temperature of the entering oil.
2. Evaporation losses have been reduced to a minimum.
3. The gravity of the oil in storage has remained practically constant, due to the decrease in evaporation.
4. In actual fires, SIL-O-CEL has demonstrated its superiority as a fireproofing material under conditions which destroyed all other insulating materials. In one refinery fire, SIL-O-CEL alone stood up and prevented the explosion of gasoline traps, by maintaining a uniform temperature in the contained oil throughout the duration of the fire. The temperature of the surrounding fire reached 1600 to 2000 degrees F.

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ing overhead in the larger integrated companies.

What may be gained by integrated or chain operation is offset by our direct advantage in personal ownership and management.

It is industrially and economically sound to believe that there will always be successful jobbing organizations just as there will be successful non-integrated refineries and non-integrated producers, who, in their specialization of their particular branch of the industry, will enjoy the same relative advantages in meeting their larger competitors in the integrated companies that we enjoy in the jobbing division.

The very large companies recognize a constant battle against rising costs. These men admit these costs are much higher than when they operated as individuals.

Big Companies Needed

Our industry unquestionably needs the big companies to carry the big load of flush production and to assist in pioneering new fields, but the big companies just as surely need the highly specialized, non-integrated organizations.

Each stirs the other on to greater accomplishment; to whittle down costs; to pioneer for new fields where big companies do not dare to venture; to develop the art of refining and marketing from the urge of "Mother Necessity"—to be the spur and the balance-wheel, one to the other.

The organization which I represent, is determined to lay its cards on the table, face up, and talk things over industrially whenever and wherever possible.

I am here as a representative of the National Petroleum Marketers Association, not to ask you to accept or reject anything, but I am here addressing you on a topic of my own selection, for the purpose of making clear that no group of men in the oil industry will go farther or strive more sincerely and earnestly than the jobbing division to develop and perpetuate harmonious industrial relations.

Let me close with this thought: "Let us be friendly; let us be tolerant; let us try stacking arms and declaring an industrial Armistice while we talk things over."

Burning Of Fuel Oil In Railroad Locomotives (*Continued*)

The worst opponent of oil admits that it will enable a passenger locomotive to handle one car more and make its schedule, and a freight locomotive at least an additional 100 gross tons.

Steam pressure can be maintained at the maximum all the time and this means:

Greater sustained capacity.

More work with the same number of locomotives.

Maintenance of established schedules with heavier trains, with ample margins for delays.

This in the final analysis must mean more capacity per pound of weight employed and per pound of fuel burned not merely more weight and power.

As locomotive weight is the chief factor in regulating bridge strength, the increased power of oil burning locomotives without increased weight should also be considered from the viewpoint of the saving oil would effect in future expenditures for bridge strengthening

A decrease of from 10 per cent to 20 per cent should follow the use of oil in locomotives.

Other Advantages Using Fuel Oil

Longer runs made by passenger trains without locomotives changing at terminals necessarily meaning more even speed between terminals on account of not having to make up lost time due to changing of locomotives at terminals.

Longer runs by freight locomotives.

Switch engines in train yards working more steadily on account of not having to go to coaling dock or cinder pit for fuel or cleaning fires.

In cotton producing territories, if the necessity arises, this commodity can be handled in open top cars.

Several years ago, while the Missouri Kansas & Texas Railway of Texas was in coal, I made a survey as to the advisability of changing to oil. Recently I made another survey on the St. Louis Southwestern Railway of Texas for the same reason. By permission of these two railroads I am in a position to present the saving made by them after changfrom coal to oil. In considering this saving it must be borne in mind that during the latter part of 1922 both of these roads suffered seriously from the effects of the shop crafts strike.

The Missouri, Kansas & Texas Railway of Texas, as of Dec. 31, 1922, had 300 locomotives converted to burn feul oil. On basis of the year's business consumption of fuel oil by locomotives was approximately 1,768,000 barrels. The annual out-of-pocket saving in burning oil for fuel in locomotives, as compared with coal, was $936,541. Other elements of saving, such as handling, enginehouse expense, saving in company haul of fuel—$528,161; total $1,464,702.

The above figures do not take intc consideration other efficiencies.

St. Louis Southwestern Railway of Texas, as of Nov. 1, 1923, had 119 locomotives converted to burn fuel oil.

On basis of an average month's business the consumption of fuel oil by locomotives is approximately 70,000 barrels. On this basis the annual out-of pocket saving in burning oil for fuel in locomotives as compared with coal is $800,000. Other elements of saving such as difference in cost of hauling coal as compared with oil, increased locomotive efficiency, etc., estimated to produce an additional saving of not less than $100,000, making the total savings from the use of fuel oil as compared with coal approximately $900,000 per annum.

From the advantages just enumerated it is evident that oil is the logical fuel for economical operation of some railroads and affords a natural outlet to the refiner for fuel oil.

Railroads have in the past, and even now are, hesitating on adopting oil as fuel on account of the large expenditure involved in changing locomotives, erecting storage facilities, etc., for the reason—

1st. They can receive no assurance of a supply of oil for a time period sufficient to warrant the expenditure.

2nd. Short period contracts.

3rd. Fluctuations in price of fuel oil.

In conclusion I wish to say that, if the railroads are to continue burning oil, steps must be taken by the petroleum industry to maintain fuel stocks in order to insure a constant source of supply and to promote a system whereby prices will be stabilized. Refiners cannot sell fuel oil at a loss and prosper neither can railroads pay exorbitant prices for fuel oil and maintain a low operating ratio. Fluctuatons in stocks and prices in the past have been too great. Both the railroads and refiners should work out a policy to make available to each other friendly assistance in order that they may prosper and safeguard each other's interests. With supply and costs solved, each will continue an era of prosperity.

Iowa Jobbers To Hear State Officials

DES MOINES, IA., Dec. 3.—A general meeting of members and friends of the Iowa Independent Oil Men's Association will be held in this city at the Savery Hotel Thursday, Dec. 13.

The morning session will be called to order at 10 o'clock, and will be followed by a luncheon given through courtesy of Des Moines jobbers. The afternoon session will begin at 2 o'clock.

Speakers will include Fred White, chief engineer of the Iowa State Highway Commission, who will address the meeting on the subject "A Good Roads Program for Iowa." State's Attorney General Ben J. Gibson will also speak on "Iowa Anti-Discrimination Laws." He will endeavor to give the jobbers his interpretation of what does and does not constitute discrimination.

(Continued from Page 17)

pounds. Disagreements over these and other points will come up later.

A considerable part of the various discussions had to do with tolerances and this phase of standardization came especially to the front with regard to taper threads. Chairman Pew quoted a communication from Vice-President Fred H. Hillman, Standard Oil Co. of California, and Walter Black. its production superintendent at Los Angeles. Most of the Standard's pipe trouble was stated to be too great tolerance in taper threads. Chris Scarfberg, who conducts investigations for the Standard's producing department at Los Angeles, and recommends specifications that guide its purchases, made the point that it was advisable to cut the tolerance from one sixteenth inch to one thirty second inch even though the purchase cost were greater.

Walter B. Pyron, vice president of the Gulf Production Co. at Fort Worth, said that mechanical taper threads should be as nearly perfect as possible and agreed that this is true even at a higher cost price. Mills represented suggested that alignments tests come within ¾ inch tolerance in 20 feet as against ½ inch tolerance proposed by the committee.

In the discussion that followed. Chairman Pew referred especially to desirability of limiting tolerances as closely as possible to cut down the swiping motion of pipe that bends in the drilling operation, thereby cutting down drilling costs and crooked hole expense.

Frank V. Faulkner of the Magnolia Petroleum Co., Dallas, told the meeting he felt that the taper thread and straight drill stem problems were two of the most important phases of standardization outside of the matter of weight and thickness of casing.

E. C. Kincade, assistant to the vice president of the Gulf Pipe Line Co. at Houston, and himself in charge of the Gulf's pipe line system, remarked that line pipe 6 inches in diameter and upwards will well stand a test. Manufacturers had stated that no test is made of line pipe on a threading basis. It was said by manufacturers that, in general. line pipe would conform in this respect to other pipe but it was not desired to restrict tolerances so closely and it was developed that this is not expected of the mills.

Senators Attempt To Discredit Fall

By A. E. Heiss

STAFF REPRESENTATIVE

WASHINGTON, Dec. 10

IN ALL but form, Albert B. Fall, former secretary of the Interior Department, during the week's inquiry into the leasing of the Teapot Dome and the drilling of the naval reserves in California, was accused of profiting by the course he took in those matters. As prosecuting attorney, so to speak, Senator Walsh of Montana laid material into the record which seemed to have no implication other than that he was preparing to show there was a sudden increase in the prosperity of the Fall ranching business about the time the Teapot lease was made.

It was brought out that Fall had bought milk cows and hogs from the Rancocas ranch of Harry F. Sinclair, had bought four blooded bulls in Kentucky, acquired a ranch for which he made an initial payment of $10,000 on an agreed price of $91,000, which the seller said was cheap for a ranch which, in all but one year had been profitable for a decade before the sale, and that Fall owned or had under lease about 37,000 acres. Even the amounts he had deposited in the bank were read into the record.

That material was collected during the week ended Dec. 8. On that day Mr. Fall notified Senator Smoot, chairman of the committee that he would be in Washington Dec. 10, to answer questions.

Attorney General Daugherty, in effect, was accused of allowing an official of the Standard (California) to carry an order from Daugherty to Lester C. Garnett, a former assistant attorney general commanding Garnett to quit talking about bringing suit to enjoin the Standard from drilling on a section in the Elk Hills district Naval Reserve No 1, title to which the company had received from the state of California, for school purposes. Garnett was a holdover from the administration that had refused to believe the naval reserves were being drained.

Report on Fall's Property

The allegation that Fall had about 37,000 acres in his ranch property was made up by Senator Walsh from reports made to him by state officials in Fall's home state. The Montana senator also read from what he called the Standard file to show that Fall, as secretary of the interior, in June 1921 arbitrarily, and without apparently making a written record, confirmed the Standard's title to lands within the naval reserve which it had bought from California by listening to an oral statement by Oscar Sutro, attorney for the Standard on June 8, and receiving from him a brief of argument after the decision had been made.

The Montana senator, aided by Senator Norris of Nebraska, made up that charge by means of a dialogue, Norris asking questions, because, as he said, he had not been present at the morning session of the committee on Dec. 7, when Walsh submitted the documents showing that in June 1921, Fall ordered the subordinate official of the General Land Office at Visalia, Cal., to drop the proceedings begun by him to contest the Standard's title. The Nebraska senator professed to believe it was irregular for Sutro to ignore the local land office officials and take up the matter with the head of the department and unheard of for the head of the department to listen to arguments on a matter of that kind without waiting for an appeal from a decision of the Commissioner of the General Land Office. He said he had had experience with such matters and that he had never heard of such a way of doing business.

An order was given the clerk from the Interior Department in attendance upon the hearings to bring a copy of the record in which Fall had given that clear title to the Standard. Norris said the letter from Assistant Secretary Finney advising the Visalia official that Secretary Fall ordered him to drop the matter would not be received as evidence in a court of law because it was merely a letter from a subordinate official advising another subordinate that their superior officer had ordered the latter to quit something he had been doing. Norris was horrified at the thought that any one could believe Fall had made a decision, affecting the title to a valuable piece of property by oral announcement, alone.

The two senators debated whether there had been a brief in support of the Standard's contention and, by their questions and answers developed that there had been two briefs on the subject but that they had not been filed until after the decision was made.

Answers Sec. 36 Charge

What might be termed an answer to the Garnett charge about the way Attorney General Daugherty handled the proposed suit against the Standard, was made by Charles E. Hamel, formerly an attorney in the department of the Interior and also in the Department of Justice. He said there was no element of fraud attached to the acquisition by the Standard of Sec. 36 in Reserve No. 1. He said the land was granted to California in 1853 for school purposes in the belief that it was non-mineral.

No oil was discovered on it until 1917 but that since that time oil had been produced in large quantities. The Department of Justice, under Attorney General Daugherty, was entirely free from criticism in the matter, Hamel declared. Hamel was examined by Senators Smoot, Lenroot and Walsh.

OIL FIELD SUPPLY TRADE NEWS

Pipe Makers Expect Good Oil Field Business Through 1924

By Special Correspondent

PITTSBURGH, Dec. 11.

SMALL purchases of line pipe, casing and other oil country goods continue the rule among the tubular goods producers of this and other districts such as Youngstown, O., and Wheeling, W. Va. Makers still are working upon backlogs but specifications against standing contracts are far from being comparable with the activity which characterized the first half of the year.

Naturally the statistical position of oil has much to do with this lack of demand but despite the present poor condition of the oil market, considerable work is planned for 1924 and according to expectations by those in a position to judge accurately the future, pipe makers will enjoy practically a normal demand for line pipe, casing and surface pipe, throughout the year, which means approximately 1,000,000 gross tons of oil country tubular goods.

Operations among pipe mills continue to average in excess of 90 per cent of capacity, made possible by the continued heavy consumption of standard full weight merchant pipe. While order books on oil country goods were badly depleted in November and that depletion is continuing this month, makers have not as yet adopted any aggressive action in the way of price cutting to inspire additional buying, believing that within a short time, the oil country goods market will have righted itself. In the meantime, prices of April 19, 1923 still prevail.

From time to time small tank awards take place which feature the steel plate market, such as the order placed by the Atlantic Refining Co., for three tanks to be erected at Providence, R. I. This will require about 400 tons of plates.

A similar tonnage is involved in a recent tank order placed by the Sun Oil Co., for Jacksonville and Tampa, Fla. The Turl Engineering Co., is inquiring for six tanks involving 300 tons, while the Phoenix Iron Works Co., Meadville, Pa., recently booked an order for two tanks involving 250 to 300 tons for the Barber Asphalt Paving Co., Maurer, N. J.

Various tank fabricators are manifesting interest in their plate requirements for the first quarter and those around Pittsburgh have not been able to develop any price less than 2.50 cents per pound, base Pittsburgh. Some in the east are said to be buying at 2.40 cents, base Pittsburgh from Eastern steel mills while some in the west have been quoted a 2.40 cents Chicago mill price. The Petroleum Iron Works, Sharon, Pa., has put out an inquiry for 3000 tons of plates for tank work and the Treadwell Construction Co., Midland, Pa., is understood to be in the market for a large tonnage for tank and barge work. Tanks for the United States Navy department at Mare Island, Cal. will require 500 tons.

Some of these fabricators will at an early date be called on to bid upon boats and barges wanted by the Standard Oil Co., of Ohio, which has announced at Gallipolis, O., that a new line of boats would be placed in operation on the Ohio river to deliver oils and gasoline to the towns along the stream.

Some of the railroads, too, are looking to the improvement of their tank car equipment, anticipating heavy needs next year. The Chicago & Alton railroad, for instance, is to issue an inquiry soon for 1000 tank cars, which will require considerable tonnage of plates.

Orders And Inquiries

As usual at this time of the year, orders for equipment are not numerous, the majority of buyers deferring action until after inventory time or until after the first of the year.

About $5,000,000 of the $12,000,000 being raised by a bond issue will be expended for equipment by the Pan-American Western Petroleum Co., a newly formed subsidiary of the Pan-American Petroleum & Transport Co., 120 Broadway, New York. The new company was formed to take over the refining plant and terminal at Los Angeles harbor, California, now operated in the name of the Pan-Amrican Petroleum Co.

Plans now are complete for the purchase of equipment by the Gulf Refining Co., for its new warehouse, a 5-story reinforced concrete structure to be erected at Thirty-second street and Penrose avenue, Philadelphia, which will cost $300,000.

The construction of a gasoline plant which with machinery and equipment will cost $300,000, is planned by the Hanlon Gasoline Co., Tulsa, which recently was organized under Delaware laws with a capital of $1,500,000 to take over the plant and properties of the Hi-Power Gasoline Co. The new company will be closely identified with the Chestnut & Smith Corp., Tulsa.

Preliminary plans have been completed by the Reese S. Allen Refinery, Amarillo, Tex., for the installation of a 42-mile pipe line from its plant to the Carson-Hutchinson oil fields, with a series of pumping plants. The improvement will cost $500,000.

An inquiry is being circulated by J. M. Gillespie, P. O. Box 128, Tavares, Fla., for one electrically-operated deep well pump with windmill, steel tower, steel tank and auxiliary equipment.

At an estimated cost of $100,000 the National Petroleum Co., Dallas, Tex., will install a pipe line and pumping plants from the Postoak oil fields, Marlin, Tex., to the San Antonio & Arkansas Pass railway. The Postoak Oil Co., Marlin, Tex., of which H. L. Pinkerton is president, is interested.

Charge Rates Too High

TULSA, Dec. 8.—The Bradford Rig & Reel Co. and others of Tulsa, have complained to the Interstate Commerce Commission that rates on oil well supplies, rig irons, drilling and pumping derricks and tubular goods from Tulsa to various points in Kansas, Arkansas, Louisiana and Texas are too high. Reparation is sought on past movement.

Supply Trade Personals

TULSA. Dec. 7.—W. E. Palmer, district manager of the National Supply Co., spent several days in the Osage this week on a quail hunting trip, and reports that the party was very successful in getting the birds.

* * *

TULSA. Dec. 7.—O. T. Dawson, general district manager, National Supply Co., has returned from Wewoka, where he spent several days looking over the developments in the field there.

* * *

TULSA, Dec. 6.—W. C. Meeks, of Wichita, general sales manager of the Bridgeport Machine Co., is spending several days in the Tulsa office of the company.

* * *

TULSA, Dec. 6.—O. V. Borden, of Tulsa and Happy Hollow, Mo., secretary of the Purchasing Agents asociation, has as his guest his mother, Mrs. O. W. Clark, of Fountain City, Ind.

Making The Refinery Show A Profit By Reducing Operating Costs

By Paul Truesdell

STAFF REPRESENTATIVE

Article 3 Testing Flue Gases-- Atomizing With Gas

TULSA, Dec. 6.

IN THE preceding article it was emphasized that while rough and ready methods of determining whether combustion is efficient or not in a coal or oil furnace, are of value, such methods should not be allowed to hold back the refiner from making scientific determinations of the carbon dioxide content of his flue gases and the temperature of the gases going up his stacks.

That word scientific, however, need not scare anyone because the methods of making those determinations are within the capacity of anyone with a good working knowledge of refinery operations. There are a number of instruments on the market for making analysis of flue gases. They bear different trade names but mostly are known by the generic name of Orsat apparatus. The name is that of the old time chemist who devised the general testing method.

The accompanying cut shows the apparatus. While the details of the newer instruments may vary somewhat from these in the illustration, the principle is the same and the similarity is sufficient to make it possible for the refiner readily to use the instructions accompanying the cut with more modern apparatus. A refinery chemist, if he has time, can make the apparatus himself.

The cut and the instructions are taken from Stillman's "Engineering Chemistry," and in that book are credited to the thirty-fifth edition of "Steam," published by the Babcock & Wilcox Co., New York.

Description of the testing method follows:

Testing Flue Gases

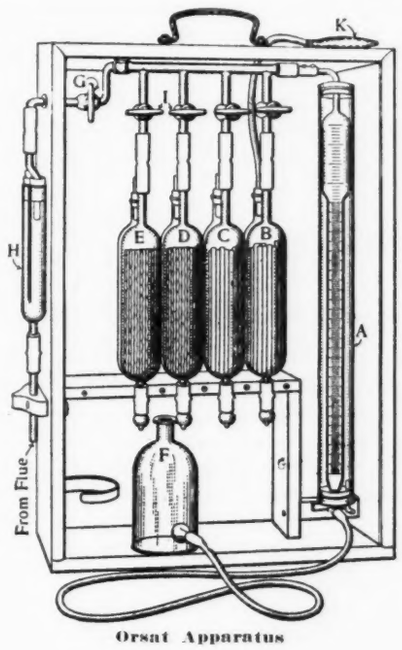
"The Orsat apparatus illustrated is the most frequently used for analyzing flue gases. The burette, A, is graduated in cubic centimeters up to 100 and is surrounded by a water jacket to prevent any change in temperature from affecting the density of the gas being analyzed.

"For accurate work it is advisable to use four pipettes, B, C, D, E, the first containing a solution of caustic potash for the absorption of carbon dioxide, the second an alkaline solution of pyrogallol for the absorption of oxygen, and the remaining two an acid solution of cuprous chloride for absorbing the carbon monoxide.

"The proportions used by the Babcock & Wilcox Co., in preparing solutions for use in the Orsat apparatus are as follows:

"1—For the absorption of CO_2 (carbon dioxide) one gram of KOH (caustic potash sticks) dissolved in water.

"2—For the absorption of oxygen. One gram of pyrogallic acid dissolved



Orsat Apparatus

in three grams of water. Three grams of KOH dissolved in two grams of water. Mix these two solutions in the Orsat pipette in the proportion of 15cc. of the acid to 35 cc. of KOH.

"3—Mix five grams of water and three grams of cuprous chloride. To this add 15 cc. or 13 grams of con. HCL (concentrated hydrochloric acid) (ap. gr. 1.2) and place in a bottle with copper gauze. Use when liquid is clear.

Apparatus Described

"Each pipette contains a number of glass tubes to which some of the solution clings, thus facilitating the absorption of the gas. In the pipettes D and E, copper wire is placed in these tubes to re-energize the solution as it becomes weakened.

"The rear half of each pipette is fitted with a rubber bag, one of which is shown at K, to protect the solution from the action of the air. The solution in each pipette should be drawn up to the mark on the capillary tube. The gas is drawn into the burette through the U-tube H, which is filled with spun glass or similar material to clean the gas. To discharge any air or gas in the apparatus, the cock G is opened to the air and the bottle F is raised until the water in the burette reaches the 100 cc. mark.

"The cock G is then turned so as to close the air opening and allow gas to be drawn through H, the bottle F being lowered for this purpose. The gas is drawn into the burette to a point below the zero mark, the cock G being then opened to the air and the excess gas expelled until the level of the water in F and A are at the zero mark. This operation is necessary in order to obtain the zero reading at atmospheric pressure.

"The apparatus should be carefully tested for leakage, as well as all connections leading thereto. Simple tests can be made; for example: If after the cock G is closed, the bottle F is placed on top of the frame for a short time and again brought to the zero mark, the level of the water in A is above the zero mark, a leak is indicated.

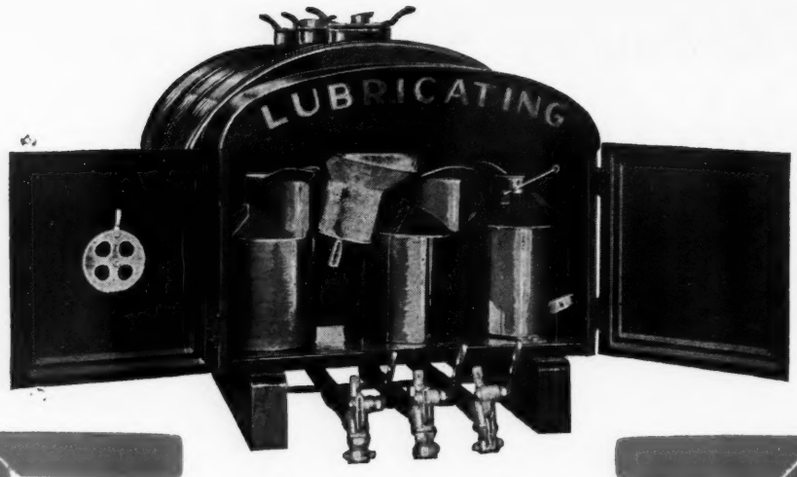
New Gas Assured

"Before taking a final sample for analysis, the burette A should be filled with gas and emptied once or twice to make sure that all the apparatus is filled with the new gas. The cock G is then closed and the cock I in the pipette B is opened and the gas driven over into B by raising the bottle F. The gas is drawn back into A by lowering F and when the solution in B has reached the mark in the capillary tube, the cock I is closed and a reading is taken on the burette, the level of the water in the bottle F being brought to the same level as the water in A.

"The operation is repeated until a constant reading is obtained, the number of cubic centimeters being the percentage of Co_2 in the flue gases.

"The gas is then driven over into the pipette C and a similar operation is carried out. The difference between the resulting reading and the first reading gives the percentage of oxygen in the flue gases.

"The next operation is to drive the gas into the pipette D, the gas being given a final wash in E and then passed into the pipette B to neutralize any hydrochloric acid fumes which may have been given off by the cuprous chloride



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solution, which, especially if it be old, may give off such fumes, this increasing the volume of the gases and making the reading on the burette less than the true amount.

"The process must be carried out in the order named, as the pyrogallol solution will also absorb carbon dioxide, while the cuprous chloride solution will also absorb oxygen.

Filling the Apparatus

"As the pressure of the gases in the flue is less than the atmospheric pressure, they will not of themselves flow through the pipe connecting the flue to the apparatus. The gas may be drawn into the pipe in the way already described for filling the apparatus, but this is a tedious method. For rapid work a rubber bulb aspirator connected to the air outlet of the cock G will enable a new supply of gas to be drawn into the pipe, the apparatus then being filled as already described. Another form of aspirator draws the gas from the flue in a constant stream thus insuring a fresh supply for each sample."

There is also on the market apparatus which makes a continuous record of CO_2 conditions in the flues.

A high percentage of carbon dioxide CO_2 in the flue gases indicates that combustion is efficient while a low carbon dioxide content and a high carbon monoxide (CO) content indicates the reverse. An excessive amount of free oxygen in the gas indicates that too much air is being admitted and that means waste.

Plants that show a carbon dioxide content of 10 or 11 per cent in their flue gases are considered to be developing high efficiency when the oxygen content is low also.

As to stack temperatures, there is no fixed rule that indicates the ideal condition. Varying factors must be taken into account. However, it is safe to say that a refiner finding the gases leaving his stacks at a temperature of 900 to 1000 degrees can be sure that a lot of his heat is going up the chimney without doing him any good. It is true that many refiners, by putting efficient economizers in their flues and stacks for superheating steam, heating boiler feed water and preheating crude oil going to the stills, have reduced their stack temperatures to 400 or 500 degrees F., which is very efficient operation.

The manager of one large Mid-Continent refinery states that the installation of an economizer in the flue of a 10-still battery made it possible for the battery to perform 27 per cent of its distillation operation on waste heat. When the stack gases show a low temperature (400 to 500) that means that the waste heat is being caught by a superheater or economizer and made to do a useful service instead of escaping up the stack into the air.

Another big western plant has recently put in an economizer which raises the temperature of the incoming crude 120 degrees F. Figuring that 9000 barrels of crude a day, about what the plant is running now, are heated 120 degrees above atmospheric temperature before going into the still and figuring one half of a British thermal unit is required to raise a pound of oil one degree, the economizer is saving directly 38 barrels of fuel oil a day, beside the very large but intangible saving made due to the fact that the introduction of crude at 180 or 200 F. into the first still of the battery instead of at 60 or 65 F. (atmospheric temperature) greatly increases the capacity of the still battery by shortening the time consumed in vaporizing the oil. Such an installation, it is figured, would pay for itself within two years at the most.

Concerning the taking of stack temperatures, Gill's "Gas and Fuel Analysis", says:

"In the majority of cases the ordinary mercurial thermometer will serve to determine the temperature of the chimney gases. It should not be inserted naked into the flue but be protected by a bath of cylinder or raw linseed oil contained in a brass or iron tube. These tubes may be half inch inside diameter and two to three feet in length. Temperatures as high as 625C (1125 F) have been observed in chimneys. This lasts, of course, but a moment, but would be sufficient to burst the unprotected thermometer."

As in the case of continuous CO_2 recorders, there are instruments on the market which keep a continuous chart of stack temperatures. These are ordinary pyrometers, with a thermocouple inserted in the base of the stack, connected by electric wires with a recording instrument.

Among interesting developments that may be a matter of the near future in refinery fuel saving, is the use of high pressure gas to atomize the oil in the burners instead of steam. This would be practical in any refinery having a compression plant to recover the gasoline from the uncondensed still gases.

An exceedingly interesting test on use of gas instead of steam with the oil was made by a combustion engineer in one of the large refineries in the Mid-Continent. His results showed a large saving in oil burned and led him highly to recommend the adoption of the method. The report of the test follows:

High Pressure Residue Gas for Atomizing Fuel Oil

A. Object of Test

To determine the consumption of high pressure residue gas when used for atomizing fuel oil in a Hammel burner under boilers.

B. Apparatus

6—Hammel 1-5/8 inch oil burners.

1—4 inch high pressure Westinghouse proportional gas meter of 20,000 cu. ft. per hr. capacity.

1—3 inch Mason pressure regulating valve.

1—Pressure relief valve.

2—High pressure gauges, one on gas line back of meter and other on discharge fuel pump.

1—3 inch Worthington piston fuel meter.

6—Wicks Boilers.

1—Hays' automatic Co_2 meter.

1—Recording pressure gauge.

3—G. E. steam flow meters.

1—2 inch line and necessary fittings connecting, blending tank at gas plant and boiler house.

C. Method of Conducting Test

Gas connections were made at bottom of tee on burner fittings so that steam could be used for atomizing in case of emergency. The pressure regulating valve was set so as to give a pressure of around 100 lbs. at burners. Relief valve was set to release at about 105 lbs. gauge. The fuel oil was measured through a 3 inch Worthington piston meter. The gas consumed was measured through a 4 inch Westinghouse proportional gas meter of 20,000 cu. ft. per hour capacity. Steam flow was measured on Nos. 1, 4 and 8 boilers by General Electric flow meters and CO_2 on No. 4 by a Hays Automatic CO_2 meter. Readings were taken every hour during a run of 24 hours.

General Data

1. Test of Hammel Burners using high pressure residue gas for atomizing oil.
2. Size of Hammel Burner 1⅝ inch
3. Duration of test in hours 24
4. Size of pipe to burners ½ inch.
5. Size of pipe from gas plant 2 inch.

The fourth article in this series, which will appear in an early issue, will take up some of the possibilities of reducing fuel costs by utilizing to the greatest possible extent the principle of flowing materials to be heated and materials to be cooled countercurrently in various phases of refinery operation.

The use of fractionating towers, both from the standpoint of reducing fuel cost by minimizing re-running necessary in the plant, and from the standpoint of utilizing the countercurrent flow proposition, will be discussed. Use of insulated towers to cool the vapors without wasting their contained heat is one of the newest fields in the province of refinery operation.

In connection with towers, the saving of time and fuel made possible through speeding up the operation of the stills will also be discussed.

Total Quantities

6.	Oil fired in 24 hrs.—6 boilers	11,500 gals.
7.	Residue gas used in 24 hrs. at 102.3 lbs. gauge—6 boilers	53,700 cu. ft.

Average Quantities

8.	Oil fired per hr.—6 boilers	481 gals.
9.	Gas used per hr. at 102.3 lbs.—6 boilers	2,237 cu. ft.
10.	Steam pressure	157.4 lbs.
11.	Oil pressure	65 lbs.
12.	Blending tank pressure	175 lbs.
13.	Gas pressure	102.3 lbs.
14.	Gas temperature	45°F.
15.	CO_2 of No. 4 boiler	12.9
16.	Steam flow of No. 1 boiler (bhp)	486 bhp Question
17.	Steam flow of No. 4 boiler (bhp)	457 bhp Question
18.	Steam flow of No. 8 boiler (bhp)	379 bhp Question

Calculated Quantities

19.	Equivalent gas used 24 hrs. at 4 oz. press. (6-boiler)	427,774 cu. ft.
20.	Equivalent gas used per hr. at 4 oz. press. (6-boiler)	17,823 cu. ft.
21.	Quantity of gas used per burner per hr. at 4 oz. press.	2,970 cu. ft.
22.	Oil fired per burner per hr.	80 gals.
23.	Cu. ft. gas at 4 oz. used per gal. oil fired	37.1 cu. ft.
24.	Heat value of oil fired per hr. (19000x8x481) 6-boilers)	73,200,000 Btu.
25.	Heat value of gas used per hr. (700x17823) 6-boilers)	12,470,000 Btu.
26.	Total Btu. from oil and gas per burner per hr. 6-boilers	85,670,000 Btu.
26a.	Percent oil saved by atomizing with gas Btu. basis $\frac{12,470,000}{85,670,000}$	14.5%
27.	Weight of cu. ft. air at 45° and 4 oz. pressure	.076 lbs.
28.	Weight of cu. ft. gas at 45° and 4 oz. pressure	.0587 lbs.
29.	Lbs. gas necessary to atomize one lb. oil $\frac{(37x.0587)}{8}$	.271 lbs.
30.	On basis of yearly average 2,000,000 cu. ft. per day this gas would handle burners using 80 gal. oil per hr.	28
31.	Lbs. steam necessary to atomize one lb. oil (prev. test)	.30 lbs.
32.	Lbs. steam per burner per hr. $\frac{(80x8x.3)}{.855}$	225 lbs.
33.	Boiler horse-power per burner per hr. $\frac{(225)}{80}$	7.5 bhp
34.	Cost per bhp Hr. (from previous report $\frac{(17.92)}{30x24}$	$.0249
35.	Cost per hr. for one burner to atomize with steam .0249x7.5	$.187
36.	Cost per hr. for eight burners	$1.49
37.	Cost per day for eight burners	$35.80
38.	Cost per year for eight burners	$13,100.00
39.	Average daily consumption of fuel oil for 8 boilers for 5 months using steam to atomize (meter)	21,560 gals.
40.	Estimated daily consumption of oil for 8 boilers using gas to atomize (21560x.865)	18,450 gals.
41.	Percent of fuel saved per hr. by using gas to atomize on Btu. basis	14.5%
42.	Barrels of oil saved per day on 14.5% basis $\frac{21560x14.5\%}{42}$	74.2 bbls.
43.	Dollars saved per day with $1.00 oil (74.2x1.00)	$74.20
44.	Dollars saved per year with $1.00 oil (74.2x1.00)	$27,100.00
45.	Cost of gas per day at 10c per M. $\frac{(2970x8x24x.10)}{1000}$	$57.00
46.	Cost of gas per year at 10c per M. (57.00x365)	$20,805.00
47.	Total saving items 39 plus 45 minus 47	$19,400.00

Summary

The use of high pressure residue gas for atomizing fuel oil under boilers is practical with ordinary equipment. Apparently the quantity of gas used in atomizing does not vary with the quantity of oil burned as the gas itself will burn. It is not necessary for the fireman to regulate his gas valve but merely to increase or decrease his oil. It is impossible to do this with steam as too much steam will put out the fire.

"The use of gas comes in very handy in case the fuel pumps lose suction or go on air; the oil stops but the gas burns thus keeping settings hot and does away with the back fire and relighting burners when pumps catch the oil again. The gas burning will even keep up steam under light loads.

"The use of gas does away with the steam for atomizing and this quantity of steam can be used for other purposes. The B.T.U. value of the gas adds just that much more to the B.T.U. value of the oil and makes a more efficient method of firing with oil. This additional heat value of the gas cuts down the consumption of oil around 15 per cent less than oil consumed by using steam for atomizing.

The following is given as a simple method of conducting the bomb calorimeter test to determine the number of B.t.u's. in a sample of coal.

Put a few drops of water in the bottom of the bomb, which may be any one of the standard makes on the market. Take a small, weighed sample of dry coal powdered to go through a 60-mesh screen, and place it on the thin, quartz, nickel or platinum capsule resting on the supporting ring suspended from the head of the bomb.

Attach a measured length, preferably not more than two inches, of fine iron ignition wire to the heavy wire terminals leaving the fine wire in the form of a loop between the terminals. Push the loop down until it rests on the fragments of coal. Take care that the wire does not touch the metal capsule and short circuit.

The cover, with the sample in position, is placed on the bomb and screwed tight.

The tube from an oxygen tank is screwed into the head of the bomb. The gas should enter the bomb in a slow stream until the gage shows 20 atmospheres (300 pounds) pressure. Extreme care should be used as the oxygen tank is under 2000 pounds pressure.

The bomb, when charged, is to be carefully centered in the calorimeter vessel which is in turn centered in the outer vessel. The stirrer and thermometer are placed in position and two liters of water whose temperature is about three degrees below room temperature is added. The most desirable way is to weigh 2000 grams of water direct into the calorimeter. Especial care is to be taken that the thermometer is centered in the space between the bomb and the edge of the vessel.

After the adjustments are completed the stirrer is operated for at least two minutes before the first temperature reading is taken on an even minute. Readings are to be made each minute thereafter for at least five minutes, the stirrer being kept going steadily at 30-40 strokes per minute and the temperature slowly and steadily rising with each reading as heat is absorbed from the room or dropping if the calorimeter is above room temperature. This ends the preliminary period.

AMONG refinery Experts to whom the readers of **National Petroleum News** are indebted for information incorporated in this series are:

Dr. C. K. Francis, M. H. Tuttle, Producers & Refiners Corp., Chicago; Carl A. Wendt, consulting engineer, Tulsa; H. L. Deming, Lincoln Oil Refining Co., Robinson, Ill.; George C. Armstrong, Indian Refining Co., Lawrenceville, Ill., Walter Miller, Marland Refining Co., Ponca City, Okla.; Dr. Roy Cross, Kansas City Testing Laboratories, Kansas City; W. G. Leamon, Stellar Refining Co., Newark; F. B. Koontz, Cosden & Co., Tulsa.

The firing circuit is closed simultaneously with the last reading of the preliminary period. The iron wire becomes red hot, the coal ignites and the iron wire fuses almost instantly. It is well to have an electric lamp in the circuit which lights when the current is turned on and goes out when the wire fuses. An ammeter in the circuit answers the same purpose. Current for the ignition may best come from a storage battery or group of dry cells giving about 12 volts. Higher voltages are apt to cause insulation troubles.

About three minutes after ignition, the temperature as indicated by the thermometer, reaches its maximum.

When the bomb is opened after the final thermometer reading the coal should be perfectly burned and the ash should appear as fused beads.

The method of determining the heat units after the test is as follows:

The quantity of water in the calorimeter is known. The temperatures of the water before ignition of the coal in the bomb is known. The temperature three minutes after the ignition, the maximum, is known. The difference between the two temperatures represents the heating effect exerted on the water by the combustion of the coal sample. It is known that one B.t.u. will raise one pound of water one degree (practically). The weight of the coal sample is known. From these figures it is easy to determine the number of B.t.u's. in the sample and from that to figure the number of B.t.u's. per pound and per ton of that particular coal.

The above represents a practical way of making the test which, where the approximate result of the test is known beforehand and the object is to compare one sample of coal with another, as to assure that the present coal is up to the previous standard, would probably prove satisfactory.

For more accurate work, corrections for radiation, for the presence of other materials in the calorimeter and various other factors should be made. These corrections and the method of making them are fully described in White's Gas & Fuel Analysis, from which the above was taken.

Europe Headed Towards Economic Chaos Unless U. S. Lends Hand

By Edward Prizer
President Vacuum Oil Co.

Delivered Dec. 12 Before American Petroleum Institute

LOOKING into the future, I do not believe the present political divisions of Europe will be permanent, because they are geographically unnatural and economically unsound. The welfare of humanity rests upon economic conditions, and, hence, political divisions become unstable when they seriously interfere with the natural economic trend.

Before the Great War there existed to some extent artificial barriers to economic movement, but as the political units were large in size and had continued for many years, trade had established certain deep channels through which economic development moved without serious disturbance. These channels have now been dammed by all sorts of artificial barriers, resulting in every country in backwaters of inactivity and stagnation. In time the economic flood must break through and go back into its natural channels. This will necessarily involve new political alignments or as an alternative, economic federations.

Europe's Unnatural Boundaries

The endeavor to divide Europe on ethnographic lines has produced an unnatural physical configuration of the countries so created, and it is not unreasonable to assume that in the progress of time these unnatural boundaries will be subject to material change. Frontiers have been established which bear no relation to that natural development in the process of which self-contained nations are created. These present boundaries are so recognized as being artificial that they are a source of constant irritation and friction between the new nations created.

Another and very serious result of the breaking up of central Europe into segments is the dislocation of industry. Manufacturing centers which were slowly built up through many years to take care of the requirements of a large geographical area and a great number of consumers, find themselves confined to a very limited field, with the consequence that mills and factories are idle because of lack of outlet. A close circle of customs barriers now strangles the trade which formerly flowed throughout a very wide territory.

Uneconomic Oil Situation

A clear illustration of this situation can be shown by the present state of the petroleum refining industry in the old Austro-Hungarian empire. When this empire had within its area the oil fields of Galicia, refining plants were constructed at various natural and strategic points in relation to economic distribution of products throughout the whole empire. Czechoslovakia now finds itself with three times the refining capacity needed for its own inhabitants, and without crude supply. Plants which were constructed in Hungary and Jugoslavia before the separation are in the same situation. To operate these plants it is necessary to import crude, or partly finished products, from Poland, Rumania or Russia, and such importations are attended with so much difficulty and expense as to make these various refineries, representing a large outlay and designed for other conditions than now exist, practically non-productive.

It is a natural inclination for those countries, which now control the crude oil supply, to make their neighbors without it pay tribute to them. They are not concerned over the dead investment represented in refining capacity in those countries which through the changes of the war have lost their free flow of raw material.

The economic burdens placed upon the common people of Europe, in consequence of the various principalities created by the Peace Commission, are beyond ability to carry, and have produced already financial breakdown. Some of these little countries would be a joke were it not that their struggles for the establishment of a distinct national entity were so pathetic.

Supposing the United States instead of comprising a continent with entire freedom of trade within its borders, was divided into 48 separate principalities, each with its president and parliament, customs bureaus with their horde of civil employees exacting tribute at every frontier, and standing armies in each state, not only would industry and trade be destroyed, but the burden of taxation would be beyond the possibility of endurance.

This, however, is the condition of Europe today. It is impossible for the newly created governments to absorb by taxation sufficient income to pay the costs of governmental operation, and, therefore, national budgets are not balanced, inflation continues, and the medium of monetary exchange becomes unstable and wholly unfitted for the natural operations of finance and trade.

Ultimate Repudiation of Debt

European governments are not paying today their running costs and cannot do so, and the result is economic chaos which can have no other outcome, unless a change occurs, than an ultimate repudiation of much of the existing debt, because resources are insufficient to pay the same.

The obligations of Europe to the United States, exclusive of England, for loans made during the war, including interest, amount to a staggering total exceeding seven billions of dollars. Nearly 10 per cent of this is debts owed by countries such as Russia, which will not pay, and minor countries wholly without ability to pay, and France and Italy have not even taken under serious consideration the question of payment; and yet it has been proposed that this European debt to the United States shall be made the basis of a soldiers' bonus. It should be remembered that vast as the sum is that Europe owes to the United States government for war loans, it constitutes only a small part of the total European debt.

New Political Alignments

Will new political alignments come through war or because of economic strain? At present war is the dangerous possibility of Europe in spite of the fact that common people are sick of bloodshed and yearn for peace. Economic strain may hasten a military outbreak. It has been asserted that not more than one hundred men in Europe knew the real origins of the late war. If true this shows how little common people know of the

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AT THIS year's meeting of the American Petroleum Institute, as at their past meetings, the task of discussing the foreign situation, particularly as it concerns the oil business, was allotted to Edward Prizer, president of the Vacuum Oil Co. The Observations in his address "Things Abroad", given at the general session Dec. 12, were gathered during an extensive trip abroad this summer.

Mr. Prizer, through the foreign business of his company, has followed European affairs for many years and his present remarks, particularly because of the grave seriousness with which he views the world abroad, are worthy the consideration of every business man—Editor.

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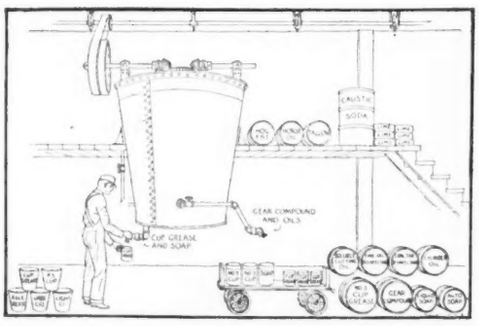

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causes which led them to slaughter. War is always the result of propaganda.

The same sinister influences are now at work in Europe. Half truths and whole falsehoods are being disseminated and all old-time animosities among peoples are being stirred up into a fresh flame. Intrigues and alliances continue and all the currents are in operation that brought about the great catastrophe in 1914.

Large Standing Armies

The standing armies of Europe as a whole are greater today than at the outbreak of the war, and the cost of military outlay is greater than existing before the war. Force is regarded as the only means of controling governmental relations and the ruling spirit is to overawe by a show of military strength.

As I see it the outlook for Europe is extremely dark unless general disarmament can be brought about and some spirit other than force be chosen to settle the unavoidable questions which arise between nations and which are the cause of friction and dispute. War can be eliminated only by the adoption of ordinary processes of judicial settlement.

Revival of Racial Animosity

The element which makes for the possibility of war is the intense revival of racial animosity between European peoples. The origin of racial groups goes so far back in human history that it cannot be traced. These groups were crystallized long before modern civilization occurred. Lack of contact, due to inadequate means of transportation, cemented together, racial groups. Before the war changes in racial groups were being slowly worked out through the contacts which rapid transportation and extension of trade created.

Carving up Europe, however, on the basis of racial groups fanned to a hot flame old racial aspirations and antagonisms, and, as a result, there has been created to-day in Europe a very dangerous attitude of mind between the differing races.

Into this spirit of racial intolerance, suspicion and hatred, propaganda falls like fuel into the fire. Falsehood is greedily received as truth; racial groups view each other with distrust and suspicion and are quick to believe evil and slow to believe good. All the elements exist which bring on war, and a spark might start the conflagration again in Central Europe which in the end would involve in all probability Europe as a whole.

Our Country's Opportunity

At the time of the armistice the United States was at the zenith of her power and influence in relation to European affairs. The common people there regarded her as the only nation that could lead them out of their morass of distress and despair. Her well-considered advice would have had the power of a command, because public sentiment would have forced European political leaders into agreement with her views.

I believe that if the United States had wholeheartedly and unreservedly entered the League of Nations, Europe would now be well along the road to recovery. I believe that the war between Greece and Turkey would not have occurred, because the intrigues leading up to it would have been prevented, and Turkey, the worst beaten of all combatants, whose footsteps through Europe have always left a trail

Edward Prizer

of blood, would not now be a dominant factor in the Levant.

I believe that the Ruhr would not have been occupied. I believe that Italy would not have played the bully in the Mediterranean and killed innocent refugee children by bombardment at Corfu over an incident which while deeply to be regretted could have been settled by ordinary diplomatic processes, particularly since it has yet to be shown that the Greek Government, or Greek people, were responsible for the murder of the Italian Emissaries. I believe that Jugoslavia would not have rattled the sabre at Bulgaria and humiliated her by harsh conditions over a disagreeable occurrence, the outcome of rowdyism.

Isolation Cannot Exist

The halls of Congress may echo with clamorings for isolation, but isolation does not and cannot exist. We believed in 1914 we were isolated, and subsequently paid heavily in blood and treasure for this belief. If there comes again another cataclysm of war in Europe we will be involved as surely as we were before, and we should, therefore seek to quench the fires of discord before they again sear us with their scorching flames. Irrespective of war our industrial and financial prosperity is intimately interwoven with the stability and prosperity of European countries, and we cannot prosper with Europe prostrated.

If the hostility in this country, stirred up by the rancorous criticism of the League of Nations, is too great at present to be overcome, then the least this country can do is to join promptly the Permanent Court of International Justice.

Interallied Debts

At the time of the Armistice there was a growing sentiment in the United States in favor of a fair adjustment of Interallied debts. It was realized that the great sums advanced by the United States to its European Allies simply enables them to carry on our fight until we were prepared for the combat, and that further, these great credits were used to obtain materials in this country on which the suppliers realized large profits.

I believe this sentiment would have crystallized into action if disarmament had occurred in Europe, and that the failure of the United States to join the League of Nations is in a large part responsible for the present military situation in Europe. The sentiment of the United States is wisely against cancellation of the Interallied debts so long as such vast sums are still being used to maintain standing armies and to create implements for human destruction.

U. S. Could Regain Prestige

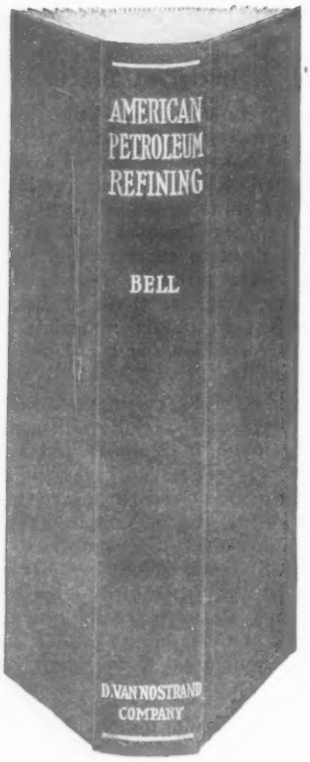
The estimation in which this country was held abroad at the termination of the war has suffered a real eclipse. There is a feeling that having drawn to ourselves three-quarters of all the gold of the world we have lost our ideals and sunk back into pure materialism. High admiration and expectancy have been succeeded by distrust, and in some quarters by actual contempt. However, the feeling abroad is so universal that the active co-operation of the United States is unavoidable if Europe is to be rehabilitated, that the predominant influence of the United States would be quickly regained if it now should show a spirit of real determination to aid.

It seems to me that there is at present in Europe, with the possible exception of France, a growing distrust of the old-time political leaders and a groping after a new leadership in the hope that somewhere and somehow relief may be secured from the present condition of wretchedness and distress. This is evidenced by the readiness with which people are submitting to movements which result practically in a dictatorship.

A hasty survey of conditions as at present existing in certain of the European countries may be of interest, and I therefore venture to make the same.

France

When France views afresh the wide belt of frightful desolation spread across the whole breadth of her fair country from the Swiss border to the sea, and recalls that not a single city, hamlet or farm in all of Germany shows even a scar from the war; when she considers the wanton destruction of her mines and factories and remembers that



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all of Germany's industrial plants are intact and ready to function to full capacity, rage and fear well up afresh in her breast. Do you wonder?

Twice within 44 years has her territory been ravished by the German hordes. She cannot shake off her fears, and believing that her late Allies will not insure protection, she is determined to create it for herself. At the outbreak of the war Germany was master of the land and England of the sea. Today France is master of the land and the air.

She is lending money to Poland, Rumania and Jugoslavia in order that they too may create military organizations that will prevent any dangerous future action on the part of Germany, particularly in coalition with Russia. She has become the dominant military power of Europe and not only knows it but is determined she will so continue. Her attitude and her intent do not make for peace but are creating the same condition that preceded wars in the past. Poincare, in demanding that Germany shall pay for the devastation she caused, is solidly backed by the French people a considerable number of whom are still living in temporary and flimsy shelters while new homes are being built for them.

Sowing the Whirlwind

The French people are thrifty to the point of avarice. They are demanding full compensation for their tremendous losses for which they feel they are in no sense responsible. Propaganda has played its part in their convictions, and until they are convinced by indisputable evidence that Germany cannot pay the vast sums demanded of her, French clamor for reparations to the maximum will continue. Her political leaders, it sees to me, are sowing the whirlwind by fostering expectations that cannot be realized.

At present France presents the appearance to the casual visitor of much prosperity. Her battlefields, which were pitted with shell holes and fertilized with human blood, have been reclaimed and are bearing ample crops. Her destroyed cities and villages are being steadily rebuilt, creating great activity which is resulting in practically no idle labor. Her mines and factories are slowly being restored. Her people are industrious and returning again to their old-time habits, and were the fear of Germany lifted they would slowly regain their former individual prosperity.

The danger to France as a nation is the fiscal burden which government has assumed in her military organization and in the costs of reconstruction. This is evidenced by the fact that the French franc stands at substantially less than one-third of its pre-war value, and inflation may continue and accelerate its depreciation. No friend of France denies the right to receive from Germany reparations for the merciless devastation which the German armies caused her, but the vital question today is—How much can Germany pay and when? French expectations, based upon an impossibility, can result only in ultimate disaster.

Germany

It is needful to the health of Europe that Germany should be restored. She possesses a great people, naturally orderly and industrious, who have made great contributions to the world's progress in industry, science and art. She has been badly led, but under wise leadership will become one of the most vigorous and admirable nations of the world. An impoverished, disorganized and despairing Germany would be a calamity to civilization, because the elements of strength and ability which Germany possesses cannot be spared.

Fears Debt Repudiation

"European governments are not today paying their running costs and cannot do so, and the result is economic chaos which can have no other outcome, unless a change occurs, than an ultimate repudiation of much of the existing debt, because resources are insufficient to pay it."—Edward Prizer.

It is beyond my ability to point the way out, or foretell the end of the existing situation. I believe, however, Germany needs the sympathetic help of this country, and sincerely trust that in the end Secretary Hughes' proposal to France will be agreed to, and that Germany's real ability to pay may be accurately determined and that she may be willing, unreservedly and wholeheartedly—to face the conclusion.

There are certain opinions regarding Germany more or less popular with which I disagree. One of them is that in spite of the war she is still a wealthy nation. On the contrary, I believe she is impoverished. It is true that the manufacturing facilities are intact, but they are worth not what they cost, but what they can earn. During four years of the war her entire energy was used in the production of war material which was consumed in the using, and, meanwhile the multitudinous objects required for every day living were used up and not replaced. Her liquid capital is gone; poverty presses with few exceptions upon the whole mass of her people.

The adage "Living from hand to mouth," has now become in Germany—"Living from wall to mouth," indicating that in many households daily sustenance is dependent upon pictures, silver plate, and other similar articles which can be sold. In point of fact, the living situation is so acute that in all probability actual outside help will be required before the winter is over. Rioting and bloodshed may come before help is extended.

Another common belief, which I do not believe, is that the German people

have vast sums on deposit in foreign countries. It is probably true that certain sinister figures in German finance and industry foresaw what would happen and accumulate foreign credits to the fullest extent that cleverness and shrewd practices would permit of, taking advantage of every opportunity for personal profit that German disorganization permitted of, but that the German people generally could accumulate funds in foreign countries is to me incredible.

Depreciation of the Mark

The statement has been made that the German authorities wilfully depreciated the value of their currency in order to escape payment of reparations. This seems to me absurd, for no nation purposely commits suicide. It came about, it seems to me, through the natural operation of stupidity and inefficiency.

Germany has had no training for the methods of Democracy. Her people were adrift in a tumultuous sea of difficulties without competent pilots. She needed sound and friendly counsel and help, which unfortunately were not given her. I believe that her people were ready to welcome a new era, and this was evidenced by the manifestations of the "No more war" movement, but unfortunately, the developments of the last five years have spread abroad hatred and a spirit of revengefulness which bode ill for the future.

Russia

When the revolution came the peasants took possession of the land and realizing that their sole right to it is in the edicts of the Soviet government, they will resist to the utmost limit the establishment of the old regime. This peasant mass, representing an illiteracy of perhaps 97 per cent, has not yet had its hope or wishes raised much above animal desires, and is intent upon holding and developing the land which it occupies and believes it will permanently own if confiscation is not thwarted.

There is, therefore, little expectation that a change in government will come by revolution, but on the contrary, improvement and changes must come through the slow process of evolution.

The fantastic dreams of Lenine and Trotsky have ruined industrialism in Russia and strangled its small but promising intellectual class. The cities are held in a tyranny worse than ever existed under the czars, but the great mass of citizenship is inert, and incapable at the present time of being organized into revolt, even though they may feel that their present government is oppressive and harmful.

Recovery Long Way Off

The Soviet government has now realized that communism is to a large extent unworkable and they are ready to use individual capital but the conditions offered are too restrictive to accomplish any results. For instance, the opportunity for capital to re-establish itself in Russia with a condition that there must be fifty-one per cent governmental ownership, which while sharing in the profits assumes none of the losses, will never recreate an industrial system, which must always rest upon the free play of individual initiative and opportunity.

However, since Russia can never thrive until industrial activity again operates, it is reasonable to expect that slowly the door will be opened until finally a free flow of capital will be possible. This, however, is a long way off. Since there is no reason to expect that Russia is likely ever to pay the large sums which she owes to foreign investors, capital will be very timid as to Russian enterprises, and, therefore, development will be very slow.

The primary need of Russia is education. The Slavic race has great possibilities. In time Russia will become one of the great nations of Europe, but, in the meantime, she hangs as a dead weight on the prospects of European progress and stability. Until her principles of government become safe and sound she will be a menace, and until a revival of her buying powers occurs, Europe will unavoidably suffer from trade depression.

Italy

Italy found herself at the close of the war in a precarious condition. Social discord was prevalent and communistic propaganda found prolific soil. Bad government added to the communistic difficulties and there was imminent danger of a social breakdown. The Fascisti movement, however, originating in the spirit of the best of Italy's young men, swept everything before it and carried Mussolini into power. It is perhaps the most remarkable revolution that history shows—bloodless in its operations and effective in its results. It has brought into force a new, sincere and real wave of patriotism which has for its goal the revival of Italian enterprise and progress.

The Italian people at present have forgotten their differences and are at work. Inefficiency has been driven out of governmental departments, a horde of tax-eating sinecures have been abolished and economies have been secured. The danger if any that exists is that dictatorships are always transient, and that the revival of nationalistic spirit may lead Italy into unwise measures as relates to international affairs.

If she can concentrate upon her domestic problems, and the earnest spirit

Oil Would Benefit

"Any reasonable stabilization of Europe would result in a tremendous flow to it of petroleum. No single thing would today so favorably affect the depressed condition of the petroleum industry as a financial and industrial revival in Europe."—Edward Prizer.

I just received a mighty interesting letter. Look for it in next week's issue.

Old Man Oil
(Himself)

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Refining

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National Petroleum News

804 Caxton Bldg. **Cleveland, Ohio**

of progress continues among her peoples, there is every chance that Italy will in the progress of time cure the ills which the great war brought on her. Her national finances are yet far from sound, and her relations with her neighbors are not yet satisfactorily adjusted, though the recent settlement of the Fiume dispute is a very hopeful indication.

England

The problems which England is facing are such as to cause her Government great concern. She is dependent for her prosperity upon her industrial activity, and the slackening of her export trade is a matter of deep anxiety. She is facing the probable unemployment of nearly two million working people before the winter is over, who cannot be turned adrift to survive or starve as circumstances may permit. Her serious problem is how to weather the storm until a restored England gives back her normal industrial markets.

In the meantime, there is much political unrest and more or less differences of public opinion as to policies to follow. There is without question a growing disposition to regard favorably a protective tariff with preferential duties in favor of her colonies. What effect such a policy would have upon her own situation is problematical, but it is certain if adopted would interfere with the trade flow between her and the United States. However, as long as the United States elects to erect high tariff fences as against other countries, we cannot criticize a like policy on the part of any other country.

England's Dual Purposes

There are two things which in my judgment stand out in English desire and purpose at the present time. The first one is a settlement of European problems, particularly as relates to France and Germany. She has been accused of having now become a German sympathizer, but I regard this as wholly incorrect. English judgment wisely foresees that there can be no European health so long as Germany is in a state of chaos. She is trying to work with France, rather than to break with her.

The other thing is a sincere desire for the most cordial relations and a full understanding with the United States. This is what led her to bravely assume the burden of adjustment of her war debt with this country, in spite of her own strained finances, and notwithstanding the fact that there is no present prospect that the debts owed her by her European Allies will be paid. The inherent integrity of the English people in this debt adjustment should command the profound respect of the people of this country.

In my judgment much depends, in relation to the progress of this sad world, upon cordial agreement between England and the United States on matters of common interest and policy. Our risks and our interests are mutual.

(Continued on page 48)

Gasoline and Oil Filling Stations

and Steel Buildings

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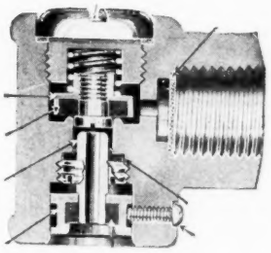

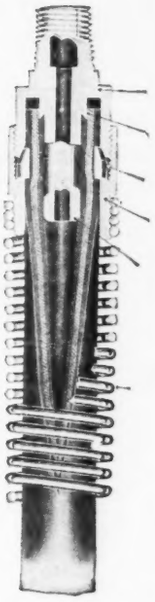

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Type L	Hand operated Beacon Visible Pump just as illustrated.	$175
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Type K	Electric operated Beacon Visible Pump, appearance same as illustrated.	$245
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WHY MARVEL PUMPS FOR OIL AND GREASE

Dripping Drops and dollars

The nasty part of dispensing oil and grease eliminated and that profit making fact impressed upon dealers everywhere.

Educational advertising, perhaps, but a proved tremendous influence toward larger oil sales.

Naturally this advertising to the dealer creates a welcome for your salesman if he can offer Marvel Equipment.

THE MARVEL EQUIPMENT CO.
Cleveland, Ohio

Canadian Factory Marvel Equipment Company, Ltd., Belleville, Ont.

Manufacturers of oil, grease and gasoline handling equipment. Direct representation and warehouse stocks in principal cities.

(Continued from page 46)

Little light can be thrown upon the situation in Central Europe and the Balkan states. Without the rest of Europe cured of its disorders, their state is one of disorganization and jeopardy. Recovering from the prostration of the war and problems arising from disintegration of former political groups will tax the citizens of every country for years to come to satisfactorily solve. It is evident, however, that without peace and the establishment of good-will, this section will remain a breeding place of wars and economic disease.

It is beyond my powers to analyze the various currents that are operating in this distressed section of the world, and if I attempted to do it, it would be time wasted. There is little hope, unless racial antagonisms die out, militaristic enterprises are forgotten, the spirit of conquest is allayed, and reasonable arrangements for the restoration of trade opportunities are entered into.

Trade Opportunities

It is probable that as a whole Europe is no poorer than she was in 1915. It is probably true that given a chance now wealth would be created with much more rapidity than occurred following the Napoleonic wars. It is, however, a sad commentary upon the frailties of human judgment and passions that the clock of European progress should have been set back one whole century by four years of war.

There has been some increase of American exports this year as against last year, both as relates to petroleum products and general commodities. The purchase of Europe, however, are limited by its buying power and not by its need. Considered from a selfish standpoint alone, the United States would enormously profit by the restoration of Europe, because, depleted and stripped, she is in great need of practically everything which our factories and mills could produce, and there would be a great flow of raw products to enable her industries to operate. Genuine peace, bringing with it confidence and stability would result in a great revival of prosperity, and relieve the suffering which is now so widespread in European countries.

The products of petroleum are demanded in an ever increasing ratio as times goes on. Every forward step in progress requires a larger percentage of petroleum in some form. Europe devastated finds petroleum even more needful in proportion to industrial operation than before the war. The automobile, for instance is still in its infancy in most of the European countries. Granted reasonable prosperity, the expansion of the motor-driven vehicle would progress with great rapidity. Any reasonable stabilization of Europe would result in a tremendous flow to it of petroleum. No single thing would to-day so favorably affect the depressed condition of the petroleum industry as a financial and industrial revival in Europe.

Location Of Sub-Surface Fault Planes With "Seismos" Tried In Texas

By Paul Wagner
STAFF REPRESENTATIVE

HOUSTON, Dec. 6.

A STEP in advance of customary exploratory methods is being taken in an area approximately 20 miles long and more than a mile wide, from eastern Kaufman county across Van Zandt and into Hopkins county.

There, an effort is being made to map sub-surface structure with the Midway limestone as a marker and to determine within the limits of a small factor of error the location of faulting similar to that responsible for oil accumulations at Powell and Mexia.

The Marland Oil Co., which operates in Texas through a subsidiary, the Alcorn Oil Co.., is responsible for the tests under way.

Leaseholds obtained originally for nominal bonuses are being drilled to the top of the Midway limestone, at a depth of 500-600 feet, after which a scientific apparatus known as a "Seismos" machine is brought into play for sub-surface mapping purposes.

This machine, which was described in considerable detail in the April 11, 1923 issue of **National Petroleum News,** resembles the seismograph previously used for recording earthquake shocks. It records photographically the wave lengths caused by artificial disturbances of the earth crust and from these wave lengths the nature, density and distance of the different formations reached by the waves.

Previously, sub-surface correlation in the territory northeast and southwest of faulting responsible for oil accumulation at Powell and Mexia has been made on the basis of the Austin chalk as a geological marker until such time as the drill had penetrated to the underlying Woodbine sand.

A departure is apparent, therefore, both in the use of the "Seismos" machine in efforts to locate the plane of sub-surface faulting and in the correlation of structure with the overlying Midway limestone as a marker.

Faulting Traced at Surface

Surface evidence of faulting exists east and southeast of the town of College Mound, in eastern Kaufman county, where one of two earlier leasing plays has resulted in the taking up of acreage by principal operators, who have blocked the structure virtually solid among them.

Southward, in the southeastern part of the county, a structure marked by some evidence of faulting exists in a southwesterly direction from a point northwest of the town of Prairieville.

In the latterly mentioned area, the Big State Petroleum Co. had blocked up considerable acreage, which it is reported without confirmation has been turned to the Humble Oil & Refining Co.. The Big State Petroleum Co., which is composed of interests identified with the U. S.-Texas Oil Corp., is backed by Frankel Brothers of New York, private bankers who control the U. S.-Mexican Oil Corp. and a tanker fleet that operates as the Universal Transportation Co.

Both structures are bounded on the east and west by dry holes completed at the time of testing operations that were put down about two years ago; but in each instance the failures mentioned are far enough in either direction to permit of the possibility in between of narrow fault line accumulations such as those at Mexia and Powell.

More Adequate Data Sought

The activities of the Marland Oil Co., in making formation tests from a point north of Prairieville across parts of Kaufman and Van Zandt counties, and into Hopkins, are brought about through an effort to check up conditions of faulting at points where fracturing does not appear at the surface, or where the evidence is considered inadequate.

Tests drilled since the Mexia development as far northeast as Sulphur Springs, in Hopkins county, have been uniformly non-productive except for the operations in the Currie-Wortham field and Powell. They have been located with regard to anticlinal structure in some cases and in others the surface geology has been inadequate.

Sub-surface data shown by the records of these failures have, however, proved guidance for future development to be undertaken in Kaufman county. Two structures along the east line of the county, and possibly, others have been leased up by principal operating companies; and at least one of these probably will be drilled next spring, a test being required as a part of certain lease requirements.

Mexia Background for Testing

After Mexia had been found productive on the upthrown (eastern) side of faulting that is subsidiary to the major Balcones fracture, an exploratory impetus was created which led to the discovery of the Currie-Wortham and Powell pools in Navarro county.

The Currie-Wortham development was of relatively small importance, although a number of good wells were productive in this area, which lies about midway between Mexia on the south and Powell on the north.

Later, the Powell field was developed in a southwesterly direction from a point approximately one mile southwest of the town of Powell to another point which is roughly described as about one mile north of west of the town of Navarro.

In the meantime, however, efforts to find oil production southwesterly from Mexia in the Woodbine sand area were unsuccessful at Groesbeck and elsewhere, in southern Limestone county. A well at Kosse, drilled by the Humphreys Oil Co., came in for an important initial flow and produced 48,000 barrels from lime formation; but further efforts to develop a field were unsuccessful and the original well has long since been abandoned.

Bedding Different to Southwest

Geologists are of the opinion that the Woodbine sand, which is the producing horizon at Mexia, Currie-Wortham and Powell, was not laid down as far southwest as Kosse; and they attribute the production of the Kosse well to some part of the Georgetown-Edwards lime formation, which is the productive horizon of the Luling field, some 150 miles further to the southwest. The Luling field is also representative of fault line accumulation subsidiary to the Balcones system.

Mention is made here of operations southwest of Mexia and past Kosse to Luling only for the purpose of differentiating certain geological conditions that are well recognized; and for the purpose of showing that certain similarities exist with regard to faulting, notwithstanding which the bedding is quite differently laid down.

First published mention of the fault at Mexia was made by Alexander Duessen in 1916, in United States Geological Survey water supply paper No. 335. In it he attributed the gas production from the shallow sands to the influence of the faulting he noted.

George C. Matson published a map of the Mexia anticline in United States Geological Survey Bulletin No. 629, correlating the shallow gas sand with the Nacatoch of North Louisiana. In Bulletin No. 661, Matson and O. B. Hopkins contoured the shallow Nacatoch horizon of the so-called Burke pool, which is included in the northeast part of the Woodbine sand development now known as the Powell field.

Although discovered nearly three years after the original well drilled at Mexia, the Powell field had the earlier Limestone county field and the nominal Currie-Wortham development for precedent.

The established fault line accumulation of the earlier fields made the working out of Powell geology comparatively

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simple; but the exactitude with which certain geologists eliminated unlikely territory and concentrated the purchase of leaseholds within circumscribed limits has been a triumph for the profession that was notable at Powell.

Character of Accumulation

As contributing to the general knowledge of East Texas fault line accumulation the following excerpt is taken from a paper before the Denver meeting of the American Association of Petroleum Geologists by Wallance E. Pratt, of the Humble Oil & Refining Co.., Houston, and F. H. Lahee of the Sun Oil Co., Dallas:

"This (Mexia) accumulation was trapped along a fault, with only incidental minor arching of the beds and in the absence of any such anticline as generally controls production in beds of equally recent origin elsewhere.

"The anticline at Mexia would appear insignificant, for instance, in Wyoming. Yet faults are rated as of minor importance among recognized factors in the trapping of petroleum. Text books accord them faint praise, to be mentioned along with lensing sands and arrested monoclines as possibly, but rarely, reservoir forming."

Why Downthrow Side Is Dry

In the discussion that followed the reading of the paper, Mr. Pratt explained that "accumulation is lacking on the west side of the fault (a fact also applicable to Powell) because that is the downthrow side on which no suitable trap is formed. On the downthrow side of the broken edges of the beds are dragged upward and the upward moving fluids are free to ascend farther along the fault.

"On the upthrow side, on the contrary, the edges of the beds are dragged down and fluids entering them under hydrostatic pressure are trapped between the westward drag along the fault and the eastward normal dip immediately to the east of the fault.

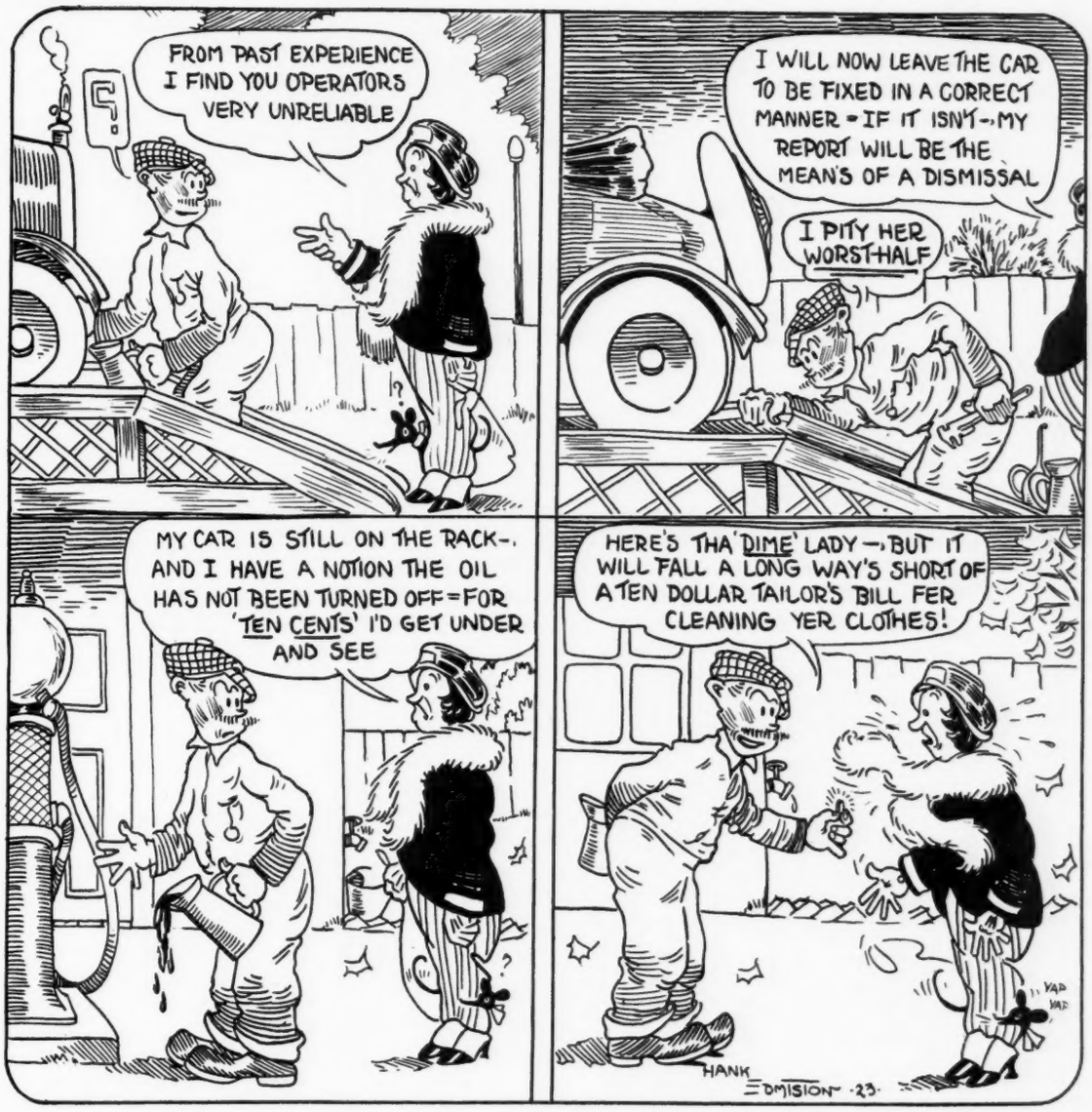
"It is possible, furthermore, that the Eagle Ford shale, a petroliferous shale immediately above the Woodbine sand in its normal position, is the source rock at Mexia. If this were the case, the source rock on the downthrow side of the fault would be in juxtaposition with the Woodbine sand on the upthrow side and oil from the source rock would move immediately into the sand along the fault.

"The Woodbine sand on the downthrow side, however, would be in contact across the fault with barren Lower Cretaceous limestone and would receive no oil unless downward migration from the overlying shale were effective.

"Whatever the source of the oil, it would penetrate the Woodbine sand on the upthrow side of the fault pushing the water from that sand down dip until equilibrium were established, regardless of the position of the crest of the anticline."

Gas House Hank

A Born Diplomat


FROM PAST EXPERIENCE I FIND YOU OPERATORS VERY UNRELIABLE
I WILL NOW LEAVE THE CAR TO BE FIXED IN A CORRECT MANNER - IF IT ISN'T - MY REPORT WILL BE THE MEANS OF A DISMISSAL
I PITY HER WORSTHALF
MY CAR IS STILL ON THE RACK - AND I HAVE A NOTION THE OIL HAS NOT BEEN TURNED OFF - FOR 'TEN CENTS' I'D GET UNDER AND SEE
HERE'S THA 'DIME' LADY - BUT IT WILL FALL A LONG WAY'S SHORT OF A TEN DOLLAR TAILOR'S BILL FER CLEANING YER CLOTHES!
HANK
DMISION

On The Lazy Bench

Unto The End

"How's this"? asked the lawyer. "You've named six bankers in your will to be pallbearers. Wouldn't you rather choose some friends with whom you are on better terms?"

"No, judge, that's all right. You see, those bankers have carried me for so long they might as well finish the job."

—Milwaukee Tank News

He Has Wide Market

An ingenious American has invented a device to prevent such motoring accidents as arise from overspeeding. He describes his contrivance as follows:

"While the car is running fifteen miles an hour, a white bulb shows on the radiator, at twenty-five miles a green bulb appears, at forty a red bulb, and when the driver begins to bat 'em out around sixty per, a music box under the seat begins to play 'Nearer, My God, to Thee.'"

—Milwaukee Tank News

The Logic of Holidays

If we didn't have holidays once in a while we couldn't appreciate the restfulness of hard work.

—American Boy

Not Necessarily

Motorist—"Am I on the right road to Pokeville?"

Countryman—"No, you ain't."

Motorist—"Then that old fellow I asked lied to me."

Countryman (expectorating)—"Mebbe not, stranger. Mebbe I hev."

—American Boy

Gazing at one's self in the mirror is by no means an indication of vanity. In many cases, it is humor.

—Boston Beanpot

Too Old

A grey whiskered old man was sunning himself on the beach at a popular resort when a nifty little flapper in a one-piece bathing suit smiled at him and asked "How old are you, old man?" He sighed and answered "Eighty-five, dad-burn it."

—The Hawkeye Weekly

Small boy (waiting with others to be served)—"Say, mister, hurry up and 'tend to me: me father's waitin' for his breakfast." Grocer: "All right, sonny; what is it you want?" Small Boy: "A broom and a bar of soap."

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You Can't Bust The Arm Of Model S-G
Romort Air and Water Station

No Swiveling Necessary

Rough use can't harm the S-G because the hose may be pulled straight down from any direction without swiveling the head structure. Nothing to forget. Nothing to damage.

But that's not all—there are several others features that will interest you, the automatic check that controls the return of the hose and arm to normal position after using, its absolutely leak proof air line, Romort Automatic Air Valves, etc. Better write our sales department today for full details.

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Romort Air Valves in your air line mean just this —"Uninterrupted Service". That's why they have the reputation of being the best that money can buy. Write our Sales Dept. today for complete catalog.

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Approximate Tests

Color—Cherry red	Viscosity—23 at 70 F. Tag.
Flash—200 Fah.	About 85% over at 550 F.
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Cold test—0/10 above

Let us have your inquiries—sample upon request

INDEPENDENT REFINING CO., Oil City, Pa.

Winter Gasoline Sales Creep Upon Summer

CLEVELAND, Dec. 6.—The constantly growing increase in the use of automobiles throughout the year with its resulting tendency of narrowing the wide gap that has always existed between winter and summer retail sales of gasoline, is strikingly shown in the following figures compiled on gasoline consumption figures for January and for August from 1917 on.

Probably the most important influence in encouraging winter driving has been the increasing manufacture and descending price scale of closed cars heated from the engine exhaust. During 1923 some of the automobile manufacturers turned out 60 per cent of closed cars as against 40 per cent of open cars.

It is probably not far from the truth to say that at least half of the cars sold during the present year were closed models and the tendency toward the closed car is likely to become more and more decided as the manufacturers devise better and more economical methods of fashioning closed bodies and thus bring down the price. And this process is going on all the time.

With the exception of 1922, when times were hard and there was little unnecessary spending, every year since 1917 has shown an increase in the percentage of January gasoline consumption as compared with August consumption.

January, 1918, consumption was 143,967,669 gallons, or 42 per cent of the August, 1917 consumption, which was 337,659,668 gallons.

January, 1919, consumption was 169,256,877 gallons, or 46 per cent of the August total which was 376,484,274 gallons.

January, 1920, consumption was 238,204,518 gallons, or 49 per cent of the August consumption which was 479,741,391 gallons.

January, 1921, consumption was 294,750,791 gallons, or 58 per cent of the August consumption which was 503,513,463 gallons.

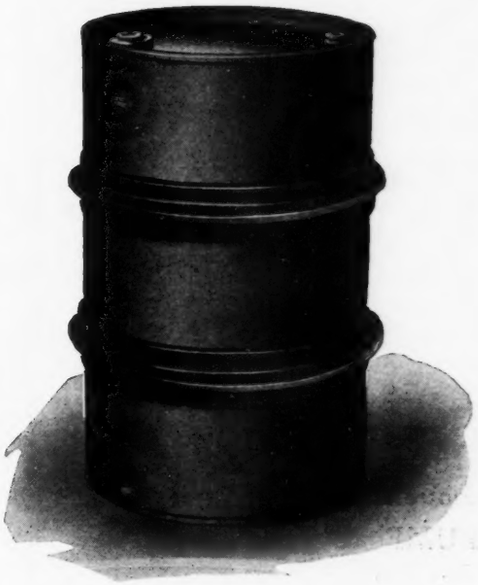
January, 1922, consumption was 282,717,148 gallons, or 46 per cent of the August total which was 583,687,932 gallons.

January, 1923, consumption was 443,128,456 gallons, or 64 per cent of the August consumption, which was 692,185,610 gallons.

Recommends Cooling Compound

CHICAGO, Dec. 6.—Chicago Garage Owners Association has recommended the purchase and resale of "Artik-Spirits" to its more than 800 garage members, according to an announcement by Jas. B. Berry's Sons Co., 910 S. Michigan blvd. The spirits are an anti-freezing compound for automobile cooling systems and are made by the Lincoln Refining Co., Robinson, Ill.

P.I.W.
STEEL PLATE CONSTRUCTION



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is the reason "Presteel" Drums come back again, time after time, from long hard trips. It's this chime that holds its contents intact long after the ordinary package has passed to the scrap heap.

Because the chime is the vulnerable point on a container P. I. W. leaves nothing undone to make it perfect. The chime ring is a heavy section of specially rolled steel. The head and shell fit into a snug recess in this ring and the extending lip of the ring is then rolled down compactly making a tight package of extreme long life.

"Presteel" Light Gauge Drums—15, 30, 50 and 55 gal. capacities.

"Presteel" I. C. C. Drums—30, 55 and 110 gal. capacities.

"Presteel" Special Drums—150 and 175 gal. capacities.

"GEM" Bilged Steel Barrels black, galvanized or tinned, 55 gal. capacity only.

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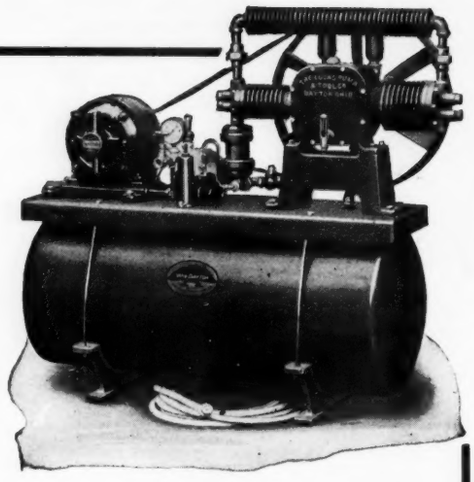
Fewer Working Parts—

—Cut First Cost—
The Price
—Take Less Oil—
Less Oil
Fewer Repairs
—Make Quick, Dependable, Efficient Operation



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have fewer working parts. Hence you can give air service without mortgaging your year's profit. And moreover you can give the sort of service that will go a long ways to making motorists prefer your filling station.

Dayton Air Compressors are built without a connecting rod or cross head pin. They start against no load and are absolutely fool proof.

Get more of the particulars and the prices of the various models.

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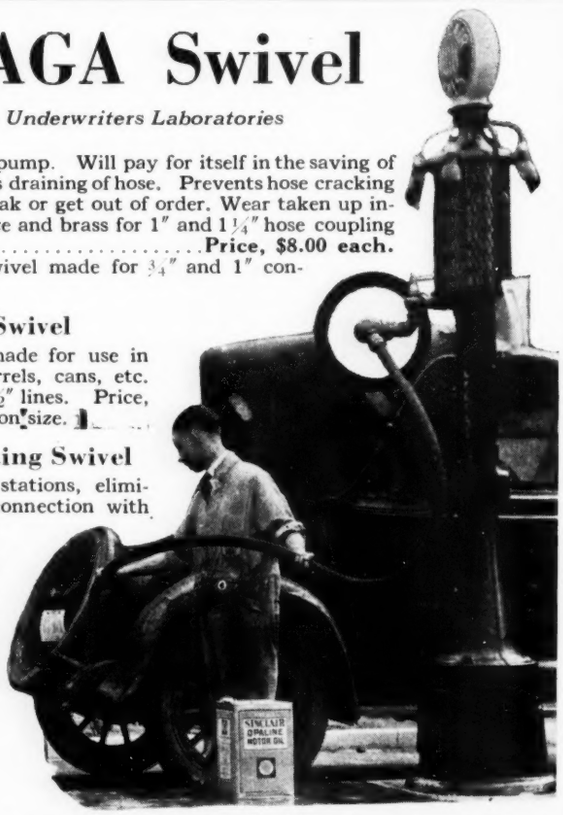
Adapted to any make pump. Will pay for itself in the saving of hose alone. Facilitates draining of hose. Prevents hose cracking or breaking. Cannot leak or get out of order. Wear taken up instantly. Made of bronze and brass for 1″ and 1¼″ hose coupling or pipe thread.....**Price, $8.00 each.** Also meter pressure swivel made for ¾″ and 1″ connections, price $7.00.

The Line Swivel

The only line swivel made for use in warehouses to fill barrels, cans, etc. Made to fit 1½″ to 2½″ lines. Price, $20 to $27, depending on size.

The Double Acting Swivel

Used at bulk storage stations, eliminates use of hose in connection with unloading tank cars or loading tank trucks. Allows a free up-and-down and sideway motion. Cannot leak. Made in sizes from 1½″ to 3″. Price, $20 to $27.50, depending on size.



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A. G. Albertoni Swivel & Valve Works
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Ratcliff Given Dinner By Co. Employes

SHREVEPORT, Dec. 6.—Ernest R. Ratcliff, of Shreveport, who today retired as president of the Louisiana Oil Refining Corp. and subsidiary concerns, was the guest of honor at a banquet given him last night at a local hotel by 45 employes of the company, including the heads of the departments and veteran employes.

As a special token of appreciation of his friendship, Mr. Ratcliff was presented with a 23-jewel Hamilton watch of white gold with a platinum chain and a gold knife. The presentation speech was made by B. A. Sutton, who spoke of the regret with which the employes saw Mr. Ratcliff go.

Addresses were also made by C. M. Bennett, vice-president; I. G. Abney, vice-president in charge of sales, who is the senior employe of the company; F. M. Witherspoon and B. R. Harrison, in charge of the land department.

Mr. Ratcliff in accepting the token of appreciation referred to the growth of the company and attributed it to the cooperation of the loyal employes.

He called attention to the fact that just 12 years ago to the day a meeting was held in the Continental Bank directors' room of the stockholders of the bankrupt Purified Petroleum Products Co. to decide whether the company was to carry on or disband. It was decided to carry on and money was subscribed for paying off claims and from this beginning the present company has grown. Mr. Ratcliff was put in charge of the company which had been originally organized by E. W. Hamiter.

Today, he pointed out, the company is a complete unit having production, refining units, sales, land department, and other adjuncts. It has production in Pine Island, Caddo, Homer, El Dorado, Crichton, Haynesville, Bellevue and Stephens. In 1919 the Louisiana was merged with the Invincible Oil Co., the Gladstone Oil & Refining Corp., and the Montrose Oil & Refining Co., Inc.

R. B. Kahle, incoming president of the company, was a guest at the banquet.

Steptoe Decision Final, Supreme Court Says

WASHINGTON, Dec. 6.—It didn't take the Supreme Court long to tell the state of West Virginia that the court felt it was right the first time when it declared unconstitutional the Steptoe law of West Virginia. This law provided that all gas requirements of the state must be supplied before any gas could be transported to other states. At the last term, the court handed down its decision, which had been under consideration for about two years. Rehearing was asked by West Virginia, was granted, and the court within a few weeks re-affirmed its first decision.

PRODUCTION SECTION

Buys Wells And Leases In Mitchell County

Staff Special

HOUSTON, Dec. 9.—The California Co., reported in advices from Fort Worth to have purchased for $650,000 the Mitchell county properties of the Underwriters Producing & Refining Co., is the style under which the Standard Oil Co. (California) operates in western Texas.

The sale involves several thousand acres of leaseholds and four producing oil wells in a region where small production was first developed by the Underwriters Producing & Refining Co. about two years ago.

Houston Oil Co., Plans Arkansas Refinery

Staff Special

SHREVEPORT, Dec. 8.—Houston Oil Co. of Texas, with Houston headquarters, which operates extensively in the Smackover, Ark., field and which has a short pipeline to Camden, Ark., where it makes fuel deliveries on its Cotton Belt railroad contract, contemplates the construction of a 2000-barrel refinery at Camden.

Although details are lacking as to when the Houston Oil plant will get under construction, it is known in Shreveport that a Dubbs process plant is proposed and that site for the refinery has been purchased.

Salt Domes Have Big Place On Program

HOUSTON, Dec. 8.—The ninth annual meeting of the American Association of Petroleum Geologists will be held at Houston Tex., March 27, 28, and 29, 1924. Headquarters will be established at the Rice Hotel.

It is planned to make this one of the most successful and interesting meetings in the history of the association. All members of the Houston Geological Society are giving their hearty cooperation to this end and will present a valued addition to Gulf Coast geology in the form of a monograph on salt domes.

Arrangements have been made to present strong papers on geological and technological subjects of vital and general interest to the oil fraternity. Two sessions are allotted for the discussion of salt domes and this time will be used in thoroughly describing and discussing a few of the more important fields, together with notations on the various problems encountered in their development. The time allotted for salt dome discussious is not sufficient to permit the reading of all papers; however every dome in Texas and Louisiana will be described in detail and published in the bulletin, together with a map showing topography, stratigraphy, cross sections and development. E. DeGolyer, a student of salt domes in the United States and foreign countries, will present an interesting paper on "The Origin of Salt Domes."

One of the most interesting and instructive features of this meeting will include a number of field trips to some of the more important domes to show the visiting members what a salt dome looks like, its surface indications and their relation to production. The inside of a dome will also be inspected at Averys Island, La., as well as methods employed in mining sulphur at Freeport, Texas. These trips will offer an exceptional opportunity for those who are not familiar with rotary methods and the problems peculiar to salt dome structures.

New Method Devised For Metering Gas

Staff Special

TULSA, Dec. 8.—A new method of measuring gas taken from the large number of wells to which it has been connected in the Chelsea-Nowata field has been adopted by the Tidal Refining Co. for its natural gasoline plant.

Seventy master meters have been installed at vacuum plants throughout the field. These meters keep an accurate check of all the gas passing through them. To give the individual producer a check on the gas coming from his wells smaller meters are set and a check made for 10 days. He is then given credit for a proper percentage of all the gas passing through the master meters during a period of six months.

In this field the Tidal is connected with 3,500 wells owned by nearly 300 individual producers. In the past a large number of individual meters have proven inefficient because of their tendency to run either fast or slow after a short time and have been too expensive considering volume handled. The plan of testing every three months and paying on the actual volume discovered in a short test has been unsatisfactory because of fluctuations due to prorations and other causes.

Shut Down In Burbank Still In Effect

TULSA, Dec. 10.—Burbank operators this morning concluded a two-day meeting in which it was decided to continue the shut-down agreement indefinitely. Another meeting was called for Jan. 10. Fifteen wells which were started in the last few days will be shut down immediately or at the next casing point.

Give Us This Day Our Senate Inquiry

WASHINGTON, Dec. 9.—Another Senate investigation involving the oil industry is indicated by a resolution offered by Senator Walsh of Montana, the ranking minority member of the committee that has been conducting the Teapot Dome lease inquiry. His resolution authorizes the committee on Public Lands and Surveys to conduct an inquiry to find out where, how, by whom and to what extent the provisions of the national leasing law have been disregarded as to the provisions forbidding any one to take or hold more than three gas or oil leases in any one state at the same time or more than one in any one geologic structure.

In the preamble to his resolution, Senator Walsh recites that it is currently reported that notwithstanding the inhibitions of the national leasing law "by sundry devices certain individuals, acting in concert through the same or separate corporate organizations or otherwise, actually, though they may not nominally, hold oil or gas leases issued under said act in number greater than three in each of several states and greater than one within the geologic structure of such a number of producing oil or gas fields, and that such interests in fact exercise control over the greater part of the output of a number of such fields, in so far as the same issues from lands leased under the said act, the number of such leases covering lands in such fields greatly in excess of three."

The resolution (S. Res. 11) was referred to the committee which the resolution provides shall make the inquiry, and of which Senator Smoot is chairman. At the time this was written, the committee had not had an opportunity to inquire of Senator Walsh what he had in mind to prove or what kind of testimony he thought he would be able to bring out in the event the Senate should direct the investigation to be made.

New Rigs And Locations Herald A Return Of Activity

By Special Correspondent

FORT WORTH, Dec. 8.

CONTINUATION of the movement to start new drilling in various parts of the North Texas district is seen in reports from the field this week, with more new locations reported than for any weekly period for many months. Between 30 and 35 new rigs, or locations, that will soon be rigs, are reported from the district. Time was when one single pool would show this many new locations in a similar period, without any great comment being aroused, but at present this is a considerable number in contrast to the weeks that have passed with only a half dozen or so new operations started.

Archer county, Geraldine townsite pool where three wells with a 1,000 barrel flush flow have been completed in a week's time, is receiving the biggest number of these new tests at this time, with the interest centered around the new area opened southeast of the Sunshine and Peterson pools. The big new wells are the R. M. F.'s No. 1 Egbert, D. O. Johnson's No. 1 Wilson, and the Wilson Farm Oil Co.'s No. 1 Wilson. All are flowing wells. The average well in the 1,600-foot sand in which the three big wells are producing is around 150 to 200 barrels, flush. There have been some considerably larger, but the average are fairly small, but very consistent producers.

In addition to closeup tests in the Geraldine townsite pool there are several new wildcats being started, well scattered through north Archer county.

The south edge of Wichita county, adjacent to the North Archer pools, is also the scene of new activity, semi-wildcat in nature

Whichita county's activity is principally confined at present to the new North Clara pool, where there are about a dozen producers already completed since the Adams, McCallister and Brown No. 1 Saunders opened up the 1,830 foot sand a couple of miles from production. Independents and large companies alike are starting new operations, principally offsets just at present.

A new shallow pool for Eastland county is indicated in the strike reported near Carbon, 10 miles south of Eastland, the Rosenfield No. 1 Gilbert flowing by heads from a sand at 480 feet. The well is three miles from the nearest production, which is found at 1,100 feet. This is said to be a record shallow depth for pay in Eastland county.

In the shallow pool nine miles east of Eastland drilling is being resumed, after several months' shut down, according to reports. Similar reports come from other parts of the county, where operations were suspended while the market was depressed.

From Young county come reports of unusual activity among purchasing agencies of big pipe line companies. New lines are being surveyed, it is reported, and new connections being sought.

Daily Estimated Production of Texas Fields

	Dec. 8	Dec. 1
Mexia-Currie	43,850	44,145
Corsicana-Powell	125,000	200,000
Wichita Falls Dist.	66,775	65,340
Ranger, lime	38,720	37,735
Ranger, sand, inc. Young and Shackleford cos.	11,830	12,390
San Antonio, Luling and Mirando	16,350	16,500
Coastal Texeas	81,715	81,500
Coastal Louisiana	6,910	7,010
Totals	391,150	464,620

German Method Might Apply In Canada

OTTAWA, CANADA, Dec. 6.—Dr. Charles Camsell, deputy minister of mines, has recently returned from an extensive investigation trip of oil producing methods in France and Germany. The trip was made to see whether any practices in the European fields could be adapted to the recovery of oil from the bituminous sands of northern Alberta, generally known as the McMurray tar sands.

Dr. Camsell said upon his return that in the field near Hanover, Germany, he had seen in operation methods which he believed might be used in north Alberta. In the German field, the oil is allowed to seep into shafts which are in some instances 800 feet deep. Residual oil in the sand is recovered by washing with hot water. He said the recovery was about 99 per cent of the possible and the cost is not prohibitive.

Colombian Concession Granted, Is Report

EL DORADO, ARK., Dec. 8.—The Oil Fields Corp. has announced that it has been granted a concession of some 13 million acres in Colombia, west of Lake Maracaibo, Venezuela. The largest tract in the concession is said to embrace more than 7 million acres, lying along the Atlantic coast of Colombia, eastward from Santa Marta. The rest of the acreage lies along the Gulf of Darien, near the eastern boundary of Panama.

Completions North-Central Texas Week Ending December 8

WICHITA FALLS DISTRICT

Wichita County

Company	Well No.	Lease	Depth	Production
John O'Neil	4	Saunders Estate	1850	150
Perkins & Cullum	2	Saunders Estate	1850	150
McDabb Oil Co	2	Potter	1870	50 bbls., shot, 20 qts.
Perkins & Cullum	1	Burnett et al	2000	Aband.
Magnolia Petroleum	6	Douglas	1030	10
Magnolia Petroleum	1	P. Waggoner	1615	30
Texhoma Oil & Refining	26	Waggoner-A	1900	150
Magnolia Petroleum	92	Reilly	520	30
Magnolia Petroleum	96	Reilly	2240	Aband.
Roy I. Carter	2	Kemp & Kempner	1800	85
Knight & Hines	1	Potts	2000	Aband.

Archer County

D. O. Johnson	1	Wilson	1600	1000
Wilson Farm Oil Co	1	Wilson	1600	1000
J. E. Dale et al	6	Wilmot	1600	150
A. T. Sibley	6	Wilmot	1590	100
White Oil Corp	11	Kemp & Kempner	1570	50
P. F. Gwynne	2-A	Carter	1580	125
Boller, Wolf & Minchew	2	Wilmot	1600	150
Staley & Wynne	4	Mrs. J. H. Carter	1570	75
C. A. Morris	1	Garten	1600	125

GENERAL RANGER TERRITORY

Stephens County

T. P. Coal & Oil Co	48	Binney	1830	85
Magnolia Petroleum	12	MacCauley	3250	110

Young County

Company	Well No.	Lease	Depth	Production
B. F. Weekley	1	McLaren	2340	50 bbls., oil 4 m. gas
Calmo Oil Co	3	Moran	2500	200

Eastland County

Panhandle Refining Co	6	Gray-Hightower	1200	40
Rosenfield et al	1	Gilbert	480	15

Mitchell County

Underwriters Producing & Refining	5	E. Morrison	3100	160
S. A. Sloam et al	1	J. H. O'Neil	3110	175

Callahan County

Curtis et al	1	F. E. Hayden	460	Aband.

Coleman County

Caldwell et al	1	L. L. Shields	400	Aband.

POWELL DISTRICT

Navarro County

Simms Oil Co	3	Rose	2980	2500
Kirby Petroleum	2	Fleming	2975	1000
Gulf Production Co	12	M. A. Crews	2975	900
Gulf Production Co	16	M. A. Crews	2975	900
Gulf Production Co	1	H. B. Boyd et al	2985	temp. aband. as dry
Skelly Oil Co	5	Keith	2970	3000
Skelly Oil Co	7	Keith	2975	5000

Mid-Continent Operators Conservative; Drilling Resumption Is Slow

By A. F. Hinton
STAFF REPRESENTATIVE

TULSA, Dec. 8.

ALTHOUGH a marked feeling of optimism pervades the producing branch of the industry in the Mid-Continent field, it is becoming evident that producers are not being carried away by this feeling to the extent of rushing wildly out to drill. While field operations are picking up somewhat here and there, the increase is no more than could have been expected following a resumption of full runs by the large purchasers. Wells that were shut down during proration are being drilled in, but comparatively little new work is being started.

Drilling Campaign Impending

Indications are not lacking, however, that within the next 60 days a real drilling campaign will be under way in the Mid-Continent, in a search for new oil which will be spurred on by increased demand and consequent higher prices. By the time this drilling campaign has progressed far enough to begin to get results, it seems probable that crude oil will be eagerly sought after, and the Mid-Continent again will come into its own as the nation's chief reliance for sustained and dependable production.

1924 Should Be Good Year

Always excepting another outburst by California, or the discovery of another Powell in the near future, it is hard to see how 1924 can be otherwise than a great year for the oil producer, and for the entire oil industry. Production has been falling very rapidly in all sections of the country; so rapidly, in fact, that production and consumption are approaching each other steadily, as the latter has been holding up remarkably. It is to be expected that consumption will fall off during the next two or three months, during the period when motoring is at its minimum, but it is entirely possible that production may take a similar course.

Last year, at this time, the graph on the cover of **National Petroleum News,** on which the vagaries of the crude oil situation are delineated, showed a momentary black area; that is, a period during which consumption had outstripped production plus imports, and the price of oil commenced to rise in January. This prosperous condition was of only short duration, for first California, and then Powell got in behind the production curve, and finally succeeded in pushing it clear off the graph, leaving consumption as far behind as Papyrus was when he raced Zev.

No New Production in Sight

When crude prices started upward last year in the Mid-Continent, the fields of California which afterward played such havoc with the industry generally, were just beginning to reach the stage at which they threatened to become important factors, while large increases in Oklahoma production also could be seen ahead if prices went sufficiently high to encourage drilling. It is a somewhat different situation this year. The California fields are now on the downgrade, with the exception of Torrance, which probably will not become a market-breaker, while in the Mid-Continent, only Burbank at present gives any indication of being able to bring forth any important amounts of new production.

Merger Rumors Persist

It is getting so in Tulsa that we count each day lost that doesn't bring forth a new crop of rumors concerning the absorption of this company or that by one or another of the Standard companies. The past week has been especially rich in these subterranean news items, none of which has so far taken more substantial form through confirmation or verification.

The mysterious meeting in Chicago, at which officials of the Standard of Indiana met with representatives of leading Independent producing companies of Oklahoma, never has been explained, nor can the fact that the meeting was held be verified through any of the men who are reputed to have been there. The story has it that Col. Stewart was there, and that among others sitting around the table were E. W. Marland, W. G. Skelly and A. E. Watts. If it was only a friendly poker game, Marland must have come out winner, for within the next day or two it was announced that he had temporarily abandoned his proposed bond issue of $15,000,000.

Burbank Shutdown at End?

Burbank operators are having one of their recurrent meetings today, to discuss the already much-discussed shut down which they have been maintaining since last May. Representatives of the press always have been religiously excluded from these conferences, and this one is no exception to that rule. Rumor has it that this meeeing will result in a considerable easing of the agreements as to drilling, especially as regards inside locations. In fact, it is said that 18 wells have started up at Burbank in

Oklahoma and Kansas Estimated Daily Average Production

Oklahoma	Dec. 8	Dec. 1	Kansas		
Bristow	48,650	49,700	Augusta-Douglass	3,300	3,550
Burbank	78,880	84,110	Blankenship Dist.	2,500	2,390
Cushing	25,400	24,600	Elbing-Peabody	8,300	8,000
Healdton	17,300	17,000	Eldorado	17,200	17,500
Hewitt	21,250	21,550	Florence District	4,300	2,850
Tonkawa	48,280	47,741	Fox-Bush	5,200	5,000
Osage, except Burbank	28,770	26,500	Greenwood County	17,400	16,175
Wewoka	15,334	16,989	Leon & Weaver	1,125	965
Oklahoma, general	98,720	96,875	Kansas, general	12,300	11,500
Total	382,584	384,065	Total	71,625	67,930
Decrease		1,481	Increase		3,695

the last 24 hours, all of them inside locations which have been shut down for a long time, either on top of the sand or near it.

Osage Sale Coming Soon

It is probable that any considerable resumption of drilling at Burbank will almost immediately result in another Osage sale, which has been postponed heretofore by the operators' agreement not to drill any wells offsetting unsold tracts, the government being also influenced, of course, by the chaotic condition in which the oil business has been for the past few months. Now that the industry seems destined to enter upon an era of better times, the sale would not have been postponed much longer, anyway, and it would not be surprising if one should be announced within the next few weeks.

Under the act of congress by which Osage leases are sold, 100,000 acres must be offered during each fiscal year beginning April 8. The last sale was held April 5, 1922, so that there has been no sale during the current fiscal year, of which only about three and a half months remain. As soon as the sale is announced, it is practically certain that unrestricted drilling again will be the rule at Burbank, as all agreements as to line wells, etc., will then be but memories.

Current Production

Oklahoma's production declined 1,481 barrels during the past week, and is now estimated at 382,584 barrels daily. Although Burbank and Wewoka fell off considerably, Tonkawa held its own and showed a small increase, while many of the smaller fields in the state are on the upward grade under the stimulus of 100 per cent runs. Burbank averaged 78,880 barrels daily this week as against 84,110 barrels last week, while Wewoka fell from 16,989 to 15,334 barrels. Tonkawa average this week was 48,280 barrels, as against 47,741 barrels last week.

Although the figures given for Kansas show an increase in production of 3,695 barrels, a considerable portion of this is due to more accurate figures obtainable around the first of the month, which indicated that weekly estimates had been carried somewhat too low. Proration was eased considerably in Kansas a week or two before it was lifted finally in Oklahoma, giving the former a start on the way toward its old production figure, which was something like 84,000 barrels daily before proration went into effect last June.

Drilling Operations

Out of 1,287 field operations under way in Oklahoma, there are 66 locations, 217 rigs, 554 drilling wells, and 450 shut down. These compare with last week's total of 1,280 operations, divided 67 locations, 217 rigs, 527 drilling, and 469 shut down. Practically every district in the state shows a small increase in drilling wells, with a corresponding decrease in shut downs, although it is evident that no general move toward a universal resumption of drilling has yet been made. Kansas, with 61 wells drilling this week as compared with 48 last week, evidently is coming out of its lethargy more rapidly than any Oklahoma district.

Figures showing field operations in the various districts of Oklahoma, Kansas and North Texas are given in the accompanying table. The table this week shows operations in the Texas Panhandle, which has not been previously included in this compilation. The totals show that there was an increase of 49 drilling wells in all the districts shown, out of 2,095 operations.

Wells Completed

In Oklahoma, during the week just closed, 40 wells were completed, of which 21 were oil wells, six were gas wells, and 13 were dry holes. This is a large decline from last week, when 70 completions were reported, divided 31 oil wells, eight gas wells, and 31 were dry holes. A large part of this decline probably is attributable to the fact that oil field roads have been in bad shape since the snow of Thanksgiving, slowing down both field work and reporting of operations.

The 21 oils wells completed this week had a total initial production of 7,533 barrels, an average of 358.7 barrels per well. Last week 31 wells brought in 7,622 barrels, with a per-well average of 245.9 barrels.

Completions reported from Kansas this week were 14 in number, of which eight were oil wells, two were gas wells, and four were dry holes. This compares with last week's figures of 10 completions, divided five oil wells and five dry holes. The eight oil wells brought in this week were of average size, bringing in 425 barrels of new production, and averaging 53 barrels per well.

The wildcat well of the H. F. Wilcox Oil & Gas Co., in Russell county, Kan-

Completions In Oklahoma And Kansas Week Ending December 8, 1923

OKLAHOMA

Company	Well No.	Location	Depth	Initial Production
Carter County				
Wirt Franklin	6	SE SE 24-2S-3W	2498–2508	150
Magnolia Pet	4	SE NE 25-2S-3W	2242–2265	18M
Humble Oil	11	SEc SW 9-4S-2W	1972–1993	25
Creek County				
Lima O. & G. Co	1	NE NE 24-17-8	2720–2726	16¾M
Hammett et al	4	SE SE 16-16-9	2940–2988	120
Hughes County				
Arkansas Nat. Gas Co	1	SWc SE 25-9-12	T. D. 4020	Dry
Kay County				
Blackwell O. & G	4-A	SEc NE 34-25-1W	1805–1842	10
Muskogee County				
Gilliland Oil	2-B	NE NE 6-15-15	1284–1306	60
S. L. Bradley	4	SW SE 29-15-15	T. D. 2432	Dry
Noble County				
Comar Oil Co	24	SW NE 3-24-1W	2542–2600	23
Okfuskee County				
R. H. Smith	1	SE NW 23-10-8	2443–2459	8M
Gypsy Oil	1	NEc NW 9-13-8	3486–3495	80
Howarth Oil Co	1	SW NW 20-12-9	T. D. 4266	Dry
Sinclair Oil	2	NE NW 13-11-11	T. D. 2498	Dry
Okmulgee County				
F. Moore et al	2	NE NW 23-15-11	2830–2841	150
Ted Savoy et al	1	SEc SE 18-15-12	1639–1670	25
Miller et al	1	SEc SW 18-15-12	1650–1698	15
Enterprise Oil Co.	8-A	SW NW 36-14-14	1445–1475	25
Sheridan et al	4	SW SW 22-16-12	2528–2537	100
Okla. Natural	4	SW SW 24-16-12	2239–2241	100 hr.
Indep. Oil Co	3	NW NW 27-16-12	2537–2644	175
Sheridan Oil	1	NWc 3-15-12	T. D. 2175	Dry
Diamond Oil	10	NE NW 15-12-13	T. D. 1860	Dry
Osage County				
Okla. Nat. Gas Co	630	NWc 9-20-12	1579–1588	1½M
Okla. Nat	633	NE NW 32-21-12	1621–1630	20M
Marland Ref	2	SW SE 20-23-8	Sand 2617	3860
Mutual Oil	2	NWc NE 34-23-8	2690–2736	50
Hineman Marshall	6	NE NW 17-23-11	1747–1805	30
No. One Oil Co	6	SE SW 17-24-9	2173–2224	40
I. T. I. O. Co	214	NEc SE 36-27-11	T. D. 1748	Dry
Woods Oil Co	1	SWc 32-29-5	T. D. 3410	Dry
Pawnee County				
Magnolia Pet	1	NE SE 32-23-3	T. D. 4170	Dry
Pontotoc County				
Delaney-Smith	1	SW NW 1-4N-8E	T. D. 828	Dry
Seminole County				
Holmes-Jarvis	1	NEc SE 21-10-8	3482–3498	50
Stephens County				
Gypsy Oil	6	SW NE 30-1S-8W	2270–2284	100
Magnolia Pet	2	NE NW 30-1S-8W	2315–2321	19M
Stella Ballard	2	NE NE 5-1S-8W	T. D. 2098	Dry
Magnolia Pet	3	SW NW 19-2S-7W	T. D. 3845	Dry
Tulsa County				
S. S. Home	1	NE SW 6-19-12	2137–2150	50
Webster et al	2	NE NW 25-19-14	T. D. 1197	Dry

KANSAS

Company	Well No.	Location	Depth	Initial Production
Butler County				
Neeley Bros	1	NWc 5-24-4	T. D. 2830	Dry
Cowley County				
Price et al	3	NE NW 36-32-4	1490–1501	30
Price et al	4	NE NW 36-32-4	1435–1441	15
Emerald Oil	3	NW NE 36-32-4	1479–1484	60
Emerald Oil	4	NW NE 36-32-4	1490–1495	40
Elk County				
Phillips-Wilson	1	SE SW 27-29-9	1463–1475	3½M
Webster et al	1	NWc NE 17-29-12	1801–1812	1½M
Clark Oil Co	1	SE NW 19-22-11	T. D. 2290	Dry
Greenwood County				
R. G. Gillespie	6	CNL SW 21-23-13	1712–1732	40
Mid-Kansas	2	SEc SW 19-25-9	2409–2451	200
Empire Ref. Co	1	NW NE 19-22-11	T. D. 2290	Dry
Sumner County				
Dillard Bros	1	NEc SE 9-33-1	T. D. 3503	Dry
Woodson County				
Rodgers-Hinkel	1	SW NW 32-23-5	1560–1571	30
Rodgers-Hinkel	2	SW NW 32-23-15	1562–1572	10

Drilling Operations, Oklahoma, Kansas and North Texas, Dec. 1-8

Oklahoma	Dec. 1 Loc.	Rigs	Drg.	S. D.	Total	Week Ending Dec. 8 Loc.	Rigs	Drg.	S.D.	Total
Burbank	11	30	9	111	161	12	30	14	111	167
Other Osage	10	13	35	33	91	9	11	34	24	78
Bristow	3	14	43	27	87	2	15	44	27	88
Cushing	8	14	37	33	92	10	11	44	32	97
North Oklahoma	5	9	51	49	105	5	7	54	40	106
South Oklahoma	6	19	186	117	338	6	33	186	119	344
Muskogee	0	6	19	34	59	0	6	26	28	60
Okmulgee	3	44	38	39	124	3	49	40	34	126
Tonkawa	2	34	36	11	83	2	31	36	12	81
Weleetka	19	24	73	24	140	17	24	76	23	140
Total Oklahoma	67	217	527	469	1,280	66	217	554	450	1,287
Kansas	29	52	48	70	199	30	52	61	73	216
North Texas										
Eastland Co	0	5	15	14	34	0	3	24	11	38
Stephens Co	0	18	18	43	79	0	18	24	40	82
Tex. Panhandle						0	6	18	12	36
Mexia (Powell)	0	19	106	12	137	0	23	94	7	124
E. Texas Wildcats	0	11	29	42	82	0	11	29	42	82
W. Texas Wildcats	0	34	88	116	238	0	34	86	110	230
Total N. Texas	0	87	256	227	570	0	95	275	222	592
Grand Total	96	356	831	766	2,049	96	364	890	745	2,095

sas, apparently would make a good well if drilled in, but will not be drilled in at present, as officials of the company state that they do not desire to be the means of opening up any new pools at this time. Acreage is changing hands at high prices in the vicinity of the well, and a great deal of drilling certainly would follow the completion of a commercial well.

The present status of the well is about two feet in the formation topped at 2990 feet, with the hole standing practically full of oil. The 5-inch casing has been landed and the water bailed out, leaving the well in good shape to be drilled when it is deemed desirable to do so. While reports were to the effect that this well was in a lime formation, officials of the Wilcox Co. state that it was beginning to show a sand when the last drilling was done. The well made several flows while the casing job was under way.

Quiet Week at Wewoka

Wewoka, with no additional wells to bolster up its production, again declined, and is now making only 15,300 barrels daily. The line of the Sinclair Pipe Line Co. will be completed about Jan. 15. it is estimated, and this will allow the Dixie Oil Co. to go ahead and develop its properties at full speed. Although it appears now that Weewoka will not be as large as to area as at first supposed, there is yet no absolute condemnation to the southwest, and the field may spread considerably from its present outlines.

The Dixie Oil Co. is plugging back its No. 1 V. V. Harris, in the southeast corner NW¼, NE¼ of 32-8-8, and will shoot it in the showing had in the Smith sand. This well went into water at 3212 feet, after having drilled through the Smith sand from 3144 to 3159 feet. The same company's No. 1 Foster, in the southwest corner of 28-8-8, an east offset to the Independent-Sinclair well in 29, is fishing for parted casing at 3124 feet, and may not be completed for some time.

Osage County

The Red Bank Oil Co. got a well starting off at the rate of 125 barrels an hour in its No. 2, in the NEc, NW¼ of 29-23-8, in the new Wilcox sand pool near Hominy, Osage county. This well, and that of the Marland Refining Co. in the section adjoining on the north, with the Mutual Oil Co.'s well in Sec. 30, probably will result in the opening of an important new pool, and it is reported that 17 rigs are going up in the vicinity already. This development lies only a mile or two south of the famous lease of Kennedy and Springer, which now belongs half to Sinclair and half to Oklahoma Producing & Refining Corp.

Roxana Gets the Oil

The Red Bank well topped the second break in the line at 2742 feet, found a broken sand at 2766 feet, went into water from 2790 to 2795 feet, and got the big pay at 2828 feet. It made 750 barrels in the first seven hours, and is said to have increased this considerably as it drilled itself into the sand. The oil, which tests about 36 gravity, is being run by the Ozark Pipe Line Co., (Roxana) which contracted for it before the well was drilled in. The Roxana is getting this oil at something below the market price, having contracted for it when proration was still in effect.

The Marland well, which is No. 2, located in the center of the NE¼, SW¼, SE¼ of 20-23-8, is making 3850 barrels at 2617 feet. The Mutual Oil Co. No. 2, in the NW¼, NE¼ of 34-23-8, got the second break at 2690 feet and at a total depth of 2736 feet, started off at the rate of about 75 barrels a day. Twin State Oil is drilling in Sec. 5, this township, and Peters Oil Corp. has a rig in the NW¼ of section 13.

TULSA, Dec. 8.—Albert E. Landsittle, sales manager of the Globe Oil & Refining Co., has returned from a swing through Indiana territory during which he called on a number of jobber customers.

Salt Creek's Potential Is 146,000 Barrels

CASPER, Dec. 6.—Preliminary tabulation of the results of production test of the Salt Creek field shows the total developed potential to have been 146,345 barrels. This was as of the last of November, when the test was completed. It represents a decline from 171,000 barrels since the last of July.

The figures do not represent the production of the Producers & Refiners Corp. in the first and second zones nor the production of Schuster Brothers nor Domino Bessemer in 10-39-79, these properties not being in the test. Test figures by zones were as follows:

1st	10,249
2nd	22,610
3rd	20,108
4th	34,011
5th	30,367
6th	29,000 (est.)
	146,345

As previously announced, proration in Salt Creek was lifted on Dec. 1.

Incorporate Gas Line In Colorado

DENVER, Dec. 7.—Following the blowing in of the huge gasser in Larimer county northern Colorado, J. W. Atkins, of Shreveport, H. A. Lindsley, former city attorney of Denver and G. W. Potter, Mid-Continent producer, incorporated the Colorado Gas & Oil Pipe Line Co. and applied to the state utilities commission for certificate of convenience and necessity for the construction of a line from the well to the outskirts of Denver, Colorado Springs and other cities.

The attorney for the Cities Service Co., which supplies Denver with manufactured gas, filed a protest against the granting of the permit and hearing will be held by the commission.

TULSA, Dec. 8.—Howard Bennette, secretary of the Western Petroleum Refiners Association left his office here Wednesday for a trip through Kansas where he is calling on members of the association. From Kansas City he will go to St. Louis for the American Petroleum Institute meeting.

TULSA, Dec. 8.—James K. Helmar of the Radio Petroleum Co. of Fort Worth, was in Tulsa yesterday calling refiners.

Gulf Coastal, Texas Completions, Week Ended December 8, 1923

Company	Lease—Well	Field	Depth	Prod.
Humble Oil & Refining Co.	Fitzsimmons 6	Pierce Jct	3510	2000
Gulf Production Co.	Chapman-Bryan 6	Goose Creek	4325	700
				40% B. S. and W.

Three Wells Near Compton Pool Fail To Get Production

By Special Correspondent

LOS ANGELES, Dec. 5.

WITH three supposedly dry holes drilled in different directions from the lease on which its discovery well was completed, the Union Oil Co. of California seems to have a monopoly on the new Compton field, which is located 15 miles from this city.

Half a mile northwest of the Callender No. 1, known as the discovery well, the General Petroleum Corp., has its Gardena No. 1 down 4000 feet without the slightest trace of oil sand, field reports say.

Three-quarters of a mile north of the Callender well, C. C. Julian's Pico wildcat is down more than 4020 feet without showing of an exciting nature.

About a mile to the northwest of the discovery well the Davis & McMillen well is cemented at 4300 feet, with nothing of an encouraging nature in the reports.

There are eleven wells in course of drilling at Compton, with one on production and several derricks standing without rigging, apparently awaiting the outcome of several drilling jobs now under way. There are quite a number of operators—some of them successful men in the other Los Angeles basin fields—who express the belief that when the Union sewed up its lease at Compton it took in the entire structure. There are those who have a well defined opinion that the pool is rather limited in area.

These operators cling to the idea that the Julian, General Petroleum and Davis & McMillen wells are going to be dry holes because they are already as deep or deeper than the Callender, which stopped at 4060 feet and has been a steady producer for three months at about 1350 barrels a day. It is located on Dominguez Hill, and the conclusion has been reached that the Union grabbed off a small dome, leaving the other operators a lot of unproductive territory surrounding it.

During the past week the Torrance field has yielded six new producing wells but the most important development there was the extension of the field for a distance of one mile to the east by the blowing in of the Sentinel Oil Co.'s Joughin No. 1. It is located just south of the Redondo-Long Beach boulevard, and the nearest producer is the Superior Oil Co.'s Torrance No. 8, a mile to the west.

The Joughin blew in while the crew was bailing for a water shut-off test. It gave evidence of being at least a 2,000-barrel producer, but the drillers killed it as quickly as possible. This hole was cemented at 3632 feet.

The Standard Oil Co. of California is now setting the oil string in a hole located 800 feet north of the Joughin No. 1. The hole is cemented at 3556 feet and drillers express the opinion that the Standard well may be brought in within a week. It has already drilled more than 200 feet into oil formation.

During the week ending yesterday the Torrance field finished six new producers and got one blow-out, the group representing what has been estimated as 10,300 barrels of possible daily production. These wells are mostly along the Redondo-Long Beach boulevard and they all range upward from 1000 barrels in yield, some touching the 2000 barrel mark. The wells are as follows:

Chanslor-Canfield Midway Oil Co., No. 13, 1000 barrels; Chanslor-Canfield, No. 15, 1200 barrels; Chanslor-Canfield No. 18, 1100 barrels; Petroleum Midway Co., Post-Houts No. 1, 1500 barrels; Star Petroleum Co., Parsons No. 1, 1500 barrels; U. S. Royalties, No. 5, 2000 barrels; Sentinel Oil Co., Joughin No. 1 estimates at 2000 barrels.

The Santa Fe Springs field completed only five new producers during the week. They ranged in size from 1250 to 1800 barrels. Operators who have been prospecting in the western extension of the field are still hopeful of securing some production there. The M. and H. Company, which is down more than 4600 feet will go to 4700 feet and make a production test. The Luneta Oil Co., which went down 5050 feet in that neighborhood, and then took out a permit to abandon, is going to make a production test at 2700 feet before giving up the hole. When the drillers got down that far they thought that the well could have been brought in as a small producer, but the company decided to go farther down, and an apparently dry formation was found all the way.

The Long Beach field finished 11 new producers which ranged upward from 700 to 4000 barrels. The new output amounted to 14,000 barrels per day, and the field's daily flow stood at 235,000, the daily falling off appearing to be about 3000 barrels over the output of the previous week.

Huntington Beach completed three new wells, adding 1200 barrels a day to the output.

During the week, the State Mining Bureau issued permits for the drilling of 15 new wells in the Los Angeles Basin fields. Eight of these will be drilled at Torrance, six at Long Beach and one at Santa Fe Springs.

California Daily Production

	Dec. 8	Dec. 1
Santa Fe Springs	205,000	212,000
Long Beach	232,000	235,000
Huntington Beach	70,000	71,000
Torrance	36,000	33,000
Compton	1,350	1,350
Rest of State	195,000	196,000
Totals	739,350	748,350

Kentucky Production Is A Little Lower

LEXINGTON, KY., Dec. 6.—On the basis of daily averages, the production in Kentucky was slightly less in October than in September, according to figures compiled by the Kentucky Oil Men's Association from the state records. Reports are made for taxation purposes by several pipe line companies. The production by counties for October and September was as follows:

	October	September
Allen	36,310.15	36,084.12
Barren	5,537.83	4,647.20
Bath	1,110.90	1,784.30
Boyd	261.12	66.27
Cumberland	182.52	1,597.31
Estill	52,834.21	48,884.31
Floyd	797.41	589.96
Hancock	2,987.23	2,783.11
Jackson	350.54	.....
Johnson	104,346.86	100,737.66
Knott	158.65	338.42
Lawrence	42,204.36	41,747.78
Lee	210,438.33	204,416.99
Magoffin	114,515.09	113,593.14
McCreary	409.57	557.43
Menifee	84.52	251.32
Monroe	171.77	666.95
Morgan	797.42	856.78
Ohio	1,253.36	720.21
Owsley	320.68	544.61
Powell	28,750.23	25,877.19
Simpson	1,185.22	1,302.30
Warren	59,760.51	56,894.71
Wayne	12,078.54	13,046.23
Wolfe	5,705.72	4,678.04
Russell	.....	2,572.00
Total	682,552.74	665,238.34

Pipe Line Shipments In Montana Fields

HELENA, MONT., Dec. 6.—The Mutal Oil Co. in October transported from the Cat Creek field of Montana 157,091 barrels of oil to Winnett. Of this total, 29,000 barrels went from Winnett to the Arro Oil & Refining Co. at Lewistown; 33,600 barrels to the Lewistown Oil & Refining Co., Lewistown; 10,800 barrels to the Standard Oil Co. of Indiana, Whiting; 6500 barrels to the Weowna Refining Co., Winnett and 10,500 barrels to the Yale Oil Corp. The balance, 66,691 barrels, went into storage.

The pipe line shipments from the Sunburst field, northern Montana, in October totalled 29,634 barrels. Of this amount, about 21,000 barrels belonged to the Ohio Oil Co., 3700 to the Homestake Exploration co. and the balance to the Mutual.

Small Declines In Initial And Runs In Shreveport Area

By Special Correspondent

SHREVEPORT, Dec. 8

DECREASE both in initial production and daily average production was shown in the Shreveport territory, including southern Arkansas fields, during the week just closed. Some influence on the recent showing is believed to be due to the beginning of some of the bad weather, including heavy rainfall, coupled with the low price of crude. At the same time there is considerable drilling activity in undeveloped areas, including those of Union and Webster parishes in which recently oil was "discovered."

The Smackover district, which dropped in daily production from 99,462 last week to 97,185 barrels this week, accounted for the bulk of the decline in daily average production. The daily average for the entire Shreveport territory during the week just closed was 174,159 barrels against 176.867 barrels for the week before, a drop of 2708 barrels.

Initial production slumped to the extent of 455 barrels and 4 in number of producers. The week recorded in the entire Shreveport territory a total of 19 completions, of which 2 were failures, 3 gassers and 14 producers with combined initial yield 2655 barrels, compared with the preceding week's record of 3 gassers, 2 failures and 18 producers with combined initial production 3110 barrels.

By districts the record of completions, compared with those of the preceding week was as follows:

Bellevue, shallow sand district: 3 producers, initial yields totaling 160 barrels, this week; against 145 barrels from 4 producers the week before.

Bienville parish, wildcat territory, one failure the Standard Oil Co's. Leon Scott No. 1 in 21-17-8, dry and abandoned, at 2560 feet.

Morehouse parish: one gasser, compared with no completion the week before; and Ouachita parish, two gassers compared with none the week before.

Stephens, Arkansas: one producer, 25 barrels initial yield, compared with 2 producers with combined initial yield 100 barrels the week before.

Smackover, Arkansas; one failure, and 10 producers with combined initial yield 2470 barrels, compared with the previous week's record of 2 gassers, one failure and 10 producers with combined initial yield 2455 barrels.

El Dorado, Arkansas, no completion, against one 50-barrel producer the week before.

Nevada county, Arkansas: no completion, compared with one failure and one 260-barrel producer the week before.

East Texas, no completion, compared with one gasser the week before.

DeSoto Red River Haynesville and Homer all showed no new completion, the same as the week before. It was the same in Webster and Union parishes, although in those parishes, due to the recent discovery of some oil in wells previously reported, there continues to be considerable drilling influenced by the indications of probably a new producing field in each parish.

SHREVEPORT, Dec. 8.—Daily average production in the Shreveport territory, embracing Arkansas fields, declined 2,708 barrels. By district the daily average for the past two weeks follows:

Daily average	Dec. 6	Nov. 29
Caddo, light	8,420	8,745
Caddo, heavy ...	2,209	2,315
Red River-DeSoto	6,422	6,420
Haynesville	22,876	23,210
Homer	8,896	9,099
Bellevue	6,820	6,110
El Dorado	18,125	18,650
Smackover	97,185	99,462
Stephens	3,206	2,856
Total 174,159		176,867
Decrease 2,708		

Completions in North Louisiana and Arkansas Week Ended Dec. 6

LOUISIANA

Bossier Parish — Bellevue

Company	Well	Location	Depth	Yield
Humble Oil & Refining Co	Roy B. & W. No. 25	15-19-11	350	75
R. O. Roy	Scanland No. 22	15-19-11	370	70
Standard Oil Co	B. & W. No. 9	10-19-11	385	15

Bienville Parish

Standard Oil Co	Leon Scott No. 1	21-17-8	2560	dry aband.

Morehouse Parish

H. S. Morris, trustee	Plemmons No. 1	22-20-5E	2265	25 m. gas

Ouachita Parish

Southern Carbon Co	Fee No. 24	27-19-5E	2275	5 m. gas
Texas Oil Co	O'Neal No. 3	33-19-5E	2250	6 m. gas

ARKANSAS

Stephens

Atlantic Oil Prod. Co	J. Webfer	30-15-19	2094	25

Smackover

S. H. Altorfor	McElroy No. 1	29-15-16	2295	200
Ark. Natural Gas Co	Patton No. 2	31-15-16	2260	300
Ark. Natural Gas Co	Patton No. 3	31-15-16	2256	200
Burch-Walker Drilling Co	Patton No. 4	31-15-16	2275	225
Owenwood Oil Corpn	Snyder No. 1	34-15-15	2000	260
Owenwood Oil Corpn	Snyder No. 2	34-15-15	1974	500
White et al	Watt No. 2	30-15-16	2280	200
Standard Oil Co	Solmson No. 2	29-15-16	2285	250
Federal Petroleum Co	W. H. Murphy No. 1	22-16-15	2060	300
Weatherbee et al	Rice No. 1	6-16-16	2260	35
Gulf Refining Co	J. H. Dawson No. 1	10-15-18	3000	dry aband.

California Estimates Revised Upward

LOS ANGELES, Dec. 7.—The August "Summary of Operations—California Oil Fields", the second monthly chapter of the ninth annual report of the state oil and gas supervisor, is now being distributed.

The report contains a special article on "California Oil Production and Reserves" by R. E. Collom, former state oil and gas supervisor, and R. M. Barnes, deputy supervisor of District No. 5.

In this article a revision is made of the estimates of ultimate recoverable oil in the various oil fields of California which were made by a committee of the American Association of Petroleum Geologists in co-operation with the United States Geological Survey as of July 1, 1921, and which set the ultimate recoverable oil at 3,095,000,000 barrels, or 30,400 barrels per acre from 101,935 acres of proved oil land. The tremendous production of oil from the new fields of the Los Angeles Basin makes necessary this revision, and the writers' estimate as of July 1, 1923, of the ultimate recoverable oil of California is 3,544,000,000 barrels, or 33,100 barrels per acre from 106,843 acres of proved oil land.

Prior to 1913 the gravity of the majority of the oil produced in California was below 20 degrees and valuable principally as fuel but since that time the production of oil above 20 degrees Baume, and containing a percentage of gasoline comparing favorably with eastern crudes, has increased until over 84 per cent of the oil produced during the first six months of 1923 was above 20 degrees Baume'. The article contains tables and graphs showing in detail the geographical distribution of quantity and quality of California's total crude oil production up to July 1, 1923.

The August "Summary" contains the data of production of clean oil and water in the various oil fields of the state for the semi-annual period closing June 30, 1923; a table showing the average daily and closed-in production of each field by months from January 1, to June 30, 1923; township plats showing all proved oil land in the state as of March 5, 1923, and the state oil and gas supervisor's annual statement of expenditures for the preceding fiscal year.

Powell Wells Require Re-Conditioning; Bureau Of Mines Method

By Paul Wagner
STAFF REPRESENTATIVE

Staff Special

HOUSTON, Dec. 9

IN CONNECTION with the plugging work necessary to be done in the Powell field of Texas, the Dallas office of the United States Bureau of Mines calls attention to successful cementing of wells with the tubing method in the Smackover, Ark., field.

Not only in Arkansas but in earlier East Texas fields, such as Mexia and Currie-Wortham, the method has been successfully applied by the Bureau of Mines, working in co-operation with the operators themselves. This method, it is pointed out, probably will be the one used at Powell.

Early in the week ended Dec. 8, the production of the Powell field had declined below the 130,000 barrel mark daily with no prospect of later completions increasing the average yield above that figure.

There remained between 50 and 60 drilling wells still to complete, but some of these are outlying from currently productive ground and are considered hopeless for oil production. Roughly 530 wells had been completed in the field, but not more than 500 of them are capable of production at this time and probably 100 are in the transition stage from flowing to pumping.

When these wells are equipped for pumping and put back on production, together with other flowing wells which soon must go through similar transition, it is believed the decline of the Powell field will take on the aspect of the later productive stages of the earlier Mexia field.

It is, therefore, possible that slightly increased production may be brought about after the field gets down to an average daily production somewhere below 100,000 barrels daily. This period of adjustment requiring to be measured it is impossible to make a definite forecast of daily production on any given data in the future further than to roughly estimate the Jan. 1, daily yield around a possible 100,000 to 110,000 barrels average; the putting of currently non-productive wells on the pump offsetting somewhat losses of additional flowing wells soon to go off production until they can be re-equipped.

Reconditioning of Wells

In addition to equipping wells mechanically for pumping, there will be required also in many cases the reconditioning of them to take care of water troubles. It is in connection with this phase of field work that the Bureau of Mines methods are mentioned as important.

The most convenient equipment for plugging off lower water by the pressure method is described as including a set of high and low pressure pumps mounted on a vehicle or on the derrick floor. The low pressure pump should be used for putting the cement into the well and the high pressure pump should be held for emergencies and for increasing the pressure on the following fluid toward the end of the operation. The plates that follow show a good arrangement of surface equipment.

A box, large enough for mixing the required quantity of cement, is placed on the derrick floor and connected to the low-pressure pump suction. The mixing box should be placed a little higher than the pump suction and should slope toward the suction opening. It is preferable to connect the suction into the bottom of the box at one corner so that the pump will take the last of a batch of cement without sucking air. A coarse screen should be tacked over the suction opening to catch all sticks, tags, or other foreign matter that could stick in the pump valves. A gate should be built across the corner of the box in front of the suction opening to control the feeding of the cement mixture to the pump.

A box 2 x 5 x 8 feet is large enough for mixing 50 sacks of cement. Two boxes should be supplied when more than 50 sacks of cement may be required to complete the job so that cement can be mixed in one box while the mixture is being pumped from the other. With this arrangement all the cement can be pumped into the well without interruption. When two boxes are required, they can be so arranged that they will drain into a well, 3 x 3 x 3 feet, placed under the edge of the derrick floor near the suction end on the low-pressure pump. The low-pressure suction connection is then run into this well.

Tubing and Pipe Capacities

A water line of sufficient size, and a hose with a nozzle for mixing, should be provided. This line should extend from a tank which can be gaged accurately, otherwise a water meter should be provided for measuring the water used in following the cement. Table II from the East Smackover field report of the Bureau of Mines shows the capacities of ordinary tubing and drill pipe.

The special oil well cements on the market are recommended for this work. However, in some cases these cements are not on hand, and a good grade of fresh Portland cement can be used. The evidence at hand indicates that the value of the so-called accelerators used in the Smackover field is over-estimated, according to the Bureau of Mines report.

Cement should be thoroughly mixed with mortar hoes, or a mechanical mixer, using a general average of 40 pounds of fresh water to 100 pounds of cement. When bags are emptied into the mixing boxes all wires, tags, or other foreign matter should be carefully kept out of the mixture, as such material may stall the pumps in the middle of the cementing operation and cause the cementing of a string of tubing before it can be removed.

Effect of Agitation

It is useless to put cement into a well in which the fluid is agitated by high-pressure gas, oil or water. The agitation will either prevent the setting of the cement or cause it to set in such a loose and porous condition that it will

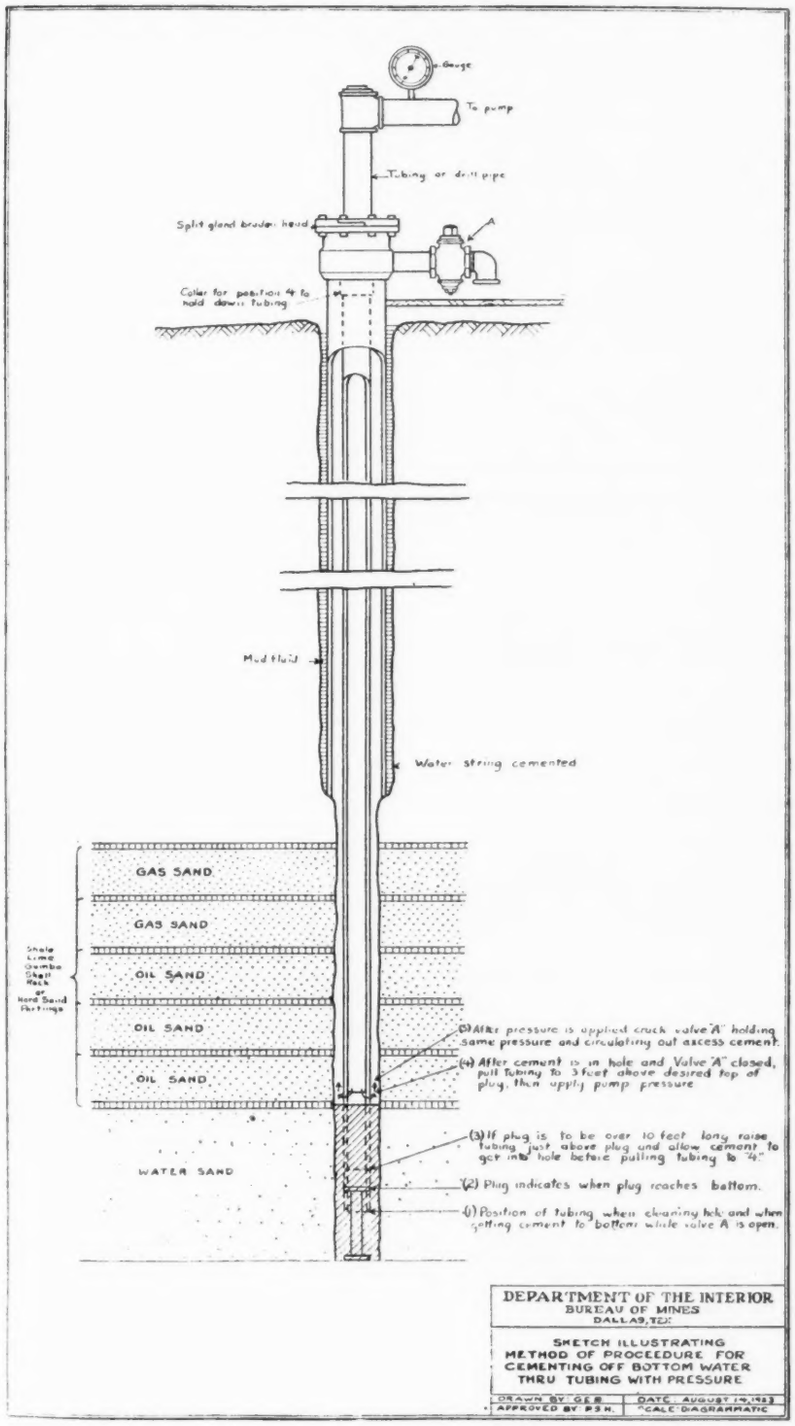
Table II

	Size Inches	Weight per Ft. Lb.	I. D. Inches	Cap. Cu. Ft. per ft.	Cap. bbl. per 100 ft.	Height in ft. filled by 1 sack cement
Tubing	2	4.53	1.995	.0217	.386	50.5
Tubing	2½	6.35	2.441	.0325	.577	34.0
Tubing	3	9.00	2.992	.0488	.868	22.5
Drill Pipe	2½	7.83	2.323	.0288	.512	38.0
Drill Pipe	2½	10.00	2.143	.0244	.434	45.0
Drill Pipe	3	10.48	2.90	.0425	.755	26.0
Drill Pipe	4	11.055	4.026	.0866	1.541	12.7
Drill Pipe	4	11.815	3.990	.0852	1.515	12.9
Drill Pipe	4	12.50	3.958	.0818	1.457	13.5
Drill Pipe	4	15.00	3.826	.0782	1.390	14.0
Drill Pipe	4	12.632	3.958	.0819	1.457	13.4
Drill Pipe	4	15.323	3.826	.0785	1.400	14.0
Drill Pipe	4½	15.50	4.388	.1030	1.830	10.3
Drill Pipe	4½	18.00	4.290	.0984	1.750	9.8
Drill Pipe	5	17.50	4.955	.1314	2.340	8.4
Drill Pipe	5	21.00	4.813	.1240	2.210	8.9
Drill Pipe	5	17.00	4.975	.1320	2.356	8.3
Drill Pipe	5	20.00	4.459	.1263	2.248	8.7
Drill Pipe	6	19.463	6.065	.1980	3.520	5.6
Drill Pipe	6	23.500	5.937	.1887	3.360	5.8
Drill Pipe	6	29.00	5.761	.1774	3.160	6.2

not shut off water. Although there have been cases where the cement and pump pressure have stopped slight agitation and secured good results, it is safer to quit the movement before cementing. Therefore wells in which there is agitation, opposite the formation to be cemented, should be mudded. The mudding should be done under lower pump pressure than will be used in cementing. If the maximum pump pressure were used on the mud it probably would be impossible to force any cement, or water from the cement, into the formations and the cement plug would not make a tight bond with the wall of the hole.

In the pressure method it is convenient to pump the cement through tubing, but drill pipe may be used if tubing is not available. It is convenient to run a 3-foot wooden plug with a disc of belting at each end that fits the inside of the tubing snugly, ahead of the cement. With the tubing near bottom this plug cannot escape and will stall the pump when the cement reaches bottom. When drill pipe is used the tool joints will have to be replaced with collars to run such a plug. If the tool joints are not removed, the travel of the cement can be checked by running the following fluid through a meter or by gaging it out of a tank.

The pipe to be used for cementing should extend to near the bottom of the hole and should be packed off at the surface with a "Louisiana type" stuffing-box, casing-head or split-gland braden-head. The casing-head is provided with an outlet which should be fitted with a short nipple and a valve. By the use of a combination swedge nipple the swivel and hose can be attached to the tubing. A pressure gage can be tapped into this nipple. The last joint of the cementing pipe should be of such length that a collar will rest on top of the casing-head when the pipe is suspended a foot from the bottom of the hole and that the next collar will rest against the bottom of the packing gland when the pipe is raised to the position at which pressure is applied; that is, three feet higher than the desired top of the cement plug.


Gauge
To pump
Tubing or drill pipe
Split gland braden head
A
Collar for position 4 to hold down Tubing
Mud fluid
Water string cemented
GAS SAND
GAS SAND
OIL SAND
OIL SAND
OIL SAND
WATER SAND
Shale Lime Gumbo Shell Rock or Hard Sand Partings
(3) After pressure is applied crack valve "A" holding same pressure and circulating out excess cement.
(4) After cement is in hole and Valve "A" closed, pull Tubing to 3 feet above desired top of plug, then apply pump pressure
(3) If plug is to be over 10 feet long raise tubing just above plug and allow cement to get into hole before pulling tubing to "4"
(2) Plug indicates when plug reaches bottom.
(1) Position of tubing when cleaning hole and when setting cement to bottom while valve A is open.
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
DALLAS, TEX.
SKETCH ILLUSTRATING METHOD OF PROCEEDURE FOR CEMENTING OFF BOTTOM WATER THRU TUBING WITH PRESSURE
DRAWN BY G.E.B.
APPROVED BY P.S.H.
DATE AUGUST 14, 1923
CALC. DIAGRAMMATIC

Insuring of Circulation

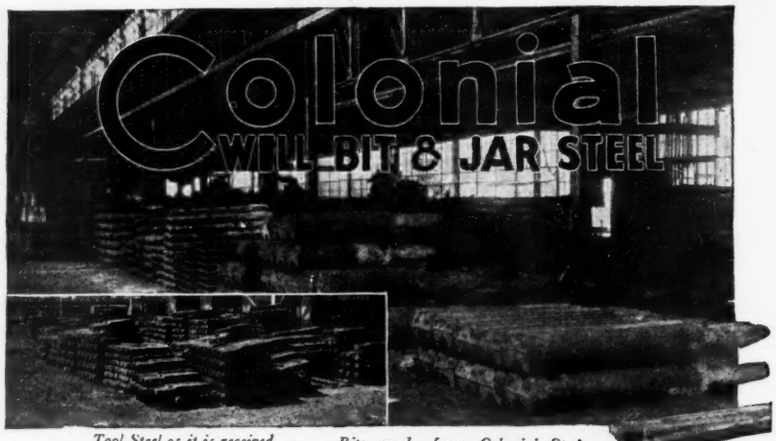
Prior to mixing the cement, thin mud should be pumped into the well to see what circulation is obtained and to wash out any fine debris which may have settled to the bottom of the hole. After free circulation has been established, the swivel should be removed and the wood plug inserted. The mixed cement is then pumped down on top of the wooden plug.

The pump will be checked when the first cement reaches bottom, as the tubing is not held high enough to allow the plug to pass entirely out. At this point the relief valve on the braden-head should be closed and the tubing raised about three feet above the required depth for the top of the cement plug. If the cement plug is to be longer than 10 feet the tubing should first be pulled just above the wooden plug and some of the cement allowed to run out. This prevents excessive washing of the cement which might otherwise occur. The cementing pipe should then be raised to its highest position.

Next, the pump pressure is applied and the cement is forced against the wall of the hole and possibly into the pores of the formation. If the cement is readily absorbed by the formations it is necessary to have enough in readiness to pump in cement until a predetermined pressure is built up or to know when the last cement has left the tubing. This can be ascertained by a wood plug following the cement or by the use of a water meter, provided the cement is followed by water instead of mud fluid, or by gaging the following fluid from a tank. Usually the amount of cement that will be required can be estimated from the way the formation took mud or water. It is best to have cement left in the tubing when the desired pressure has been attained. Plate V illustrates the working of the method.

The cement cannot rise above the end of the tubing unless the upper formation takes water. In case the cement rises on to the face of the oil sand it is later washed out. It would form only a poor bond with the oil sand if left in.

When sufficient pressure has been built up, circulation is resumed with the



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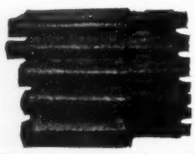

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relief valve on the casing-head partly open. Constant pump pressure should be maintained while circulating. This pressure must be sufficient to keep the cement plug at rest and at the same time to circulate out any excess cement which may have risen above the desired depth for the top of the cement plug.

It is better to omit the second plug as this may cause trouble in circulating out excess cement. Enough cement can be kept at hand and mixed for continuous pumping. The tubing may be thus kept full of cement until no more can be forced into the formations, after which the relief valve should be cracked and the excess circulated out as described above.

The action of the pumps will indicate about how much cement can be taken and it is possible to reduce the waste by starting mud fluid or water through the pumps considerably before the end point is reached. The cost of cement, however, is of secondary importance.

After making sure that all excess cement has been circulated out, one-third to one-half of the maximum pressure should be maintained for at least 24 hours. The well should then be shut in and allowed to stand from 8 to 10 days before testing. The well should not be bailed too rapidly when testing the plug, and great care should be taken to avoid dropping the bailer when the gas starts. The pump pressures required in this work differ, of course, with the conditions and formations in each individual well. In the Mexia and Currie fields, Texas, a pressure of from 500 to 800 pounds has been used with excellent results.

Plate V shows the cement plug placed to catch a parting to exclude bottom water. The edge waters of Smackover appear to be encroaching through fairly thin sands that are protected above and below to a considerable extent by tight caps. Some of the operators there have hesitated to try the method, fearing that the cement will seal off the oil sand. There is little danger of this, as cement will not bond with oil-wet sand.

The method is not new, being at least five years old, and has been used in many fields of the United States. Only in rare instances has the use of this method decreased the oil production of a well, the Bureau of Mines division points out; it usually results in increased oil production with decreased production of water.

Some operators believe that cement will not set in salt water. Cement will set in highly mineralized water, in salt water, or in oil if it is properly handled, but it will not bond with sand grains that are wetted with oil.

The pressure cementing method has a good chance of success when the liner cannot be removed. The cement is forced through the perforations and between the liner and the wall of the hole. Rather than strain on a stuck liner and risk breaking in top water or causing a fishing job, it is described as often better to cement inside and through the liner by this method.

North Colorado Gasser Is Turning To Oil

DENVER, Dec. 8.—The big gasser on Wellington dome, Larimer county, Colo., which caused all the excitement for the past month, is stirring up new interest. Recently it started to spray oil at the rate of 150 barrels a day and the volume of oil is increasing. The flow of gas apparently was undiminished 23 days after it was drilled in and had not been brought under control.

When the well first came in the vapor arising from the 8½-inch casing was white like a fleecy cloud. It gave every indication of being a dry gas. The Union commenced the difficult task of shutting in the big gasser. A 7,000-lb. gate cap and a four-way valve were ordered to the site while the men working with cotton and cup grease in their ears and pads held by football masks upon their heads, began to anchor the casing, and get ready to swing the big gate into position. While this work was under way a leak between the 8½ and 10-inch casing appeared and this was mudded off and finally stopped. The gate was swung into position over the 8½-inch casing in the meantime and when the leak was believed to be under control the closing of the valves slowly commenced.

The day before Thanksgiving observers noticed that the vapor arising from the well was becoming darker in color and casting a greater cloud over the district. This was the first indication that the nature of the gas was undergoing a change. A day or two later the capping which had been placed over the two casings to close the leak between them blew out and it became necessary to open the valves to the fullest extent while the work was being done over again.

The vapor from the well continued to turn darker in color and to spray the workmen and surrounding area with a film of oil. The workmen donned slickers, and were supplied with gas masks from the army store at Fort D. A. Russell and vegetation half a mile away became coated with crude oil. Head officials of the company in California were notified of the changing situation and some of these immediately left for the well site. Additional equipment was ordered to be used in shutting off the leak between casings and this is now being installed with indications being favorable for shutting in the well within a day or two.

E. N. Miller, field superintendent; C. S. Sherman, manager in this district; J. M. Douglas, who spotted the well; are among the Union officials on the ground while others are on the way from California.

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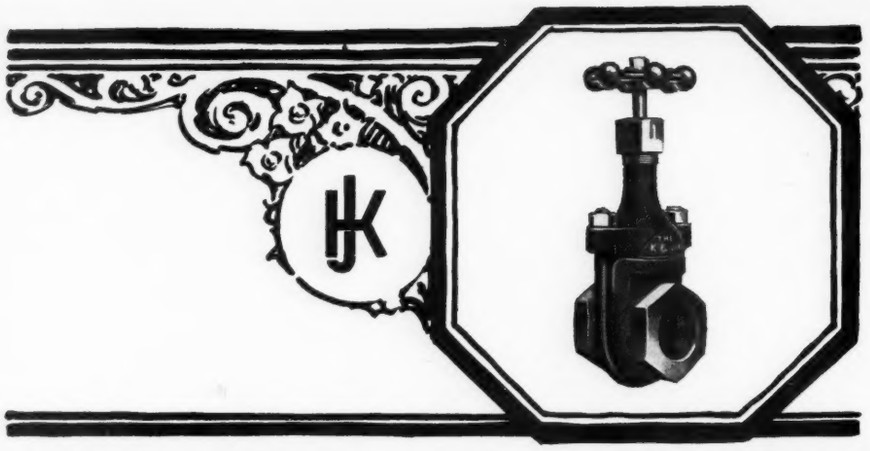

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Montana Pipe Line Runs Totals Are Given

HELENA, MONT., Dec. 6.—Up to the end of September, 1923, pipe line runs in Montana for all time had totalled 5,522,366 barrels of which the Cat Creek field had produced 5,110,770 barrels. Only two fields of the state, Cat Creek and Sunburst have pipe line connections, except for that part of the Elk Basin field lying in Montana, whose oil is carried into Wyoming.

Some small production has come from two other fields. These are the Devils Basin and Soap Creek fields, but this output has been consumed chiefly in field boilers and is not carried by the state railroad commission as marketed production. The following figures were compiled by that commission from reports by the pipe line companies.

Under the heading of Cat Creek, it is noted that two pipe lines made reports. The Mutual has transported practically all of the oil. The Montana Independent Pipe Line Co. carried only 72,023 barrels and quit business in September, 1922. Since then the line was sold at sheriff's sale to the Continental Supply Co., which later has sold it to the Mutual. The latter company is putting it into condition and will operate it, as the Mutual's line is not equal to possible output of the field.

The Illinois Pipe Line Co. is the transporting agency in the Sunburst field, operating gathering lines and a short trunk over the line into Canada from the terminus of which shipments are made by tank car to the Imperial Oil, Ltd. plants at Regina and Calgary.

Oil transported by pipe lines totals as follows:

	Cat Creek Mutual	Sunburst Mont.	
January, 1921 ..	67,519		
February, 1921 ..	106,294		
March, 1921	87,300		
April, 1921	90,286		
May, 1921	116,880		
June, 1921	108,482		
July, 1921	112,710		
August, 1921	114,581		
September, 1921 .	131,329		
October, 1921 ...	147,671		
November, 1921 .	136,961		
December, 1921 .	108,565		
January, 1922 ..	144,737	1,435	
February, 1922 ..	133,395	11,480	
March, 1922	145,507	478	
April, 1922	145,120	13,948	
May, 1922	132,295	6,697	
June, 1922	157,617	6,229	
July, 1922	199,554	1,913	
August, 1922 ..	241,254	21,727	
September, 1922	216,071	8,116	1,975
October, 1922	220,862		4,077
November, 1922 ..	199,020		11,332
December, 1922 .	180,215		11,603
January, 1923 .	160,605		17,819
February, 1923 ..	127,025		10,171
March, 1923	251,101		15,479
April, 1923	198,129		29,643
May, 1923	225,835		9,757
June, 1923	212,646		37,159
July, 1923	175,946		78,498
August, 1923	128,574		91,240
September, 1923 .	114,660		92,543
Total barrels .	5,038,747	72,023	411,596

PITTSBURGH, Dec. 8.—The Buckeye Pipe Line Co., at Corning, about 60 miles from Marietta, O., suffered damage from fire which followed a bolt of lightning recently. One 30,000-barrel tank of oil was destroyed.

California's Shut-In Production Exceeds 100,000 Barrels

HOUSTON, Dec. 7

WHEN California daily averages shall have declined to a point where it is desirable to open it up there remains a total daily potential shut-in production of more than 90,000 barrels daily of settled crude testing higher than 20 Be. gravity.

Heavy oil in California that remains shut in totals roundly 15,000 barrels additional. It is, therefore apparent, that the more than 100,000 daily shut-in production raises the state's potential to approximate 850,000 barrels daily; as other production had declined, Dec. 1, below the 750,000 barrel mark.

Strength was shown in the California heavy fuel crude market throughout the period of light oil congestion earlier in the year, as previously pointed out by the writer. It is important, however, to call attention to the fact that California stocks of heavier than 20 gravity, oil including residuum, increased only 172,637 barrels in October to 42,585,664 barrels, Nov. 1, the latest stock figures available.

The Nov. 1 stocks in California included 33,659,232 barrels of refinable cluded (above 20 degrees
crease in October of 2,074,973 barrels, according to American Petroleum Institute figures; and 12,104,654 barrels of tops, an October increase of stocks in that particular of 605,331 barrels.

Total stocks, that is to say a combination of light crude, tops and heavy oil totaled 88,349,550 barrels, Nov. 1, an October increase of 2,852,941 barrels.

American Petroleum Institute figures, for comparative purposes, show that fuel crudes and residuum increased from Oct. 1, 1922 stocks of 39,900,530 barrels to 40,745,093 barrels, April 1, 1923, and 43,696,865 barrels, Sept. 1, 1923. From Aug. 1 to Sept. 1, last, an increase was noted of 2,027,043 barrels but this was largely discounted by the decline apparent Oct. 1 and Nov. 1 from the 43,696,865-barrel mark.

Stocks of refinable crude totaled 16,358,771 barrels, Oct. 1, 1922, as compared with 25,848,478 barrels, April 1, 1923. A division was made in the meantime, however, that segregated the April 1 total into 4,282,303 barrels of tops and 21,566,175 barrels of refinable crude. Sept. 1, 1923, refinable crude stocks had increased to 29,029,198 barrels and quantities of tops stored had grown to 10,397,772 barrels, against which Nov. 1 figures apply for comparison.

Shut-in Heavy Oil

Shut in potential production of California heavy crude is shown by a current check of the situation to approximate 15,000 barrels daily, according to a Pacific Coast executive in a letter to the Houston office of **National Petroleum News.**

Estimates of this executive are herewith reproduced and compared with total shut in production for California, the latter figure being as of Nov. 1 but virtually unchanged since. It will be understood that this executive's estimate covers only such crude as grades lower than 20 degrees, Be., whereas the comparative figures include both lighter and heavier grades.

These figures are of interest because of the confusion caused by the popular conception that San Joaquin Valley production is all heavy crude, i. e. that classifying as below 20 Be. gravity. As a matter of fact, the San Joaquin Valley was producing, prior to the shut down brought about by flush conditions in the Los Angeles Basin, 63 per cent oil testing above 20 gravity and 37 per cent grading below 20 degrees.

Prior to the Associated Oil Co.'s recent closing down of about 6,000 barrels daily in the Kern River field, most of the shut-in San Joaquin Valley production was in the Coalinga east side, Buena Vista hills of the Sunset-Midway classificaton and the Elk Hills. These are all light crude areas, the Coalinga west side, McKittrick, Kern River and the rest of Midway-Sunset continuing to operate on heavy crude.

Actually the refinable crudes of all older fields, whether of San Joaquin Valley, Coastal or Los Angeles Basin classification, had to give way to the recent flush production of the newer Los Angeles Basin fields. These included the Brea-Olinda, Coyote Hills and Montebello fields, which produce only light oil.

Torrance Only Lively Field

Another California observer, in a letter to the Houston office of **National**

Field	Bbls., Estimated Shut in, Below 20°	Total, Estimated Shut in, Daily	Light Oil, Shut in Daily
Coalinga	1,000	22,000	21,000
Elk Hills	1,500	17,500	16,000
Kern River	6,000	6,000	0
Lost Hills—Belridge	1,500	5,350	3,850
McKittrick	1,000	1,000	0
Midway-Sunset	1,000	26,790	25,790
Los Angeles—Salt Lake	1,000	1,000	0
Cat Canyon	300	300	0
Santa Maria	1,200	4,300	3,100
Lompoc	500	500	0
Brea-Olinda*	0	1,900	1,900
Coyote Hills*	0	12,000	12,000
Montebello*	0	9,000	9,000
Total	15,000	107,640	92,640

*Los Angeles Basin, foothill section.

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Pumping Problems

WE GOT an enthusiastic letter from Texas the other day about a producing well equipped with a 30 h.p. Reid Engine, 5/8" Axelson Sucker Rods, an Amco Pump (working barrel) and a Noxon Stuffing Box.

This letter said that while the lease foreman was away not long ago something happened to the governor on the engine, permitting the engine to run wide open from eight o'clock in the evening until seven o'clock the next morning.

But the quality of every item of equipment on that well was such that absolutely no damage was done!

It must be one of the most comfortable feelings in the world to have wells equipped like that—and thank goodness, there are a lot of them in the oil fields west of the Mississippi!

We wish that every man who ever has a moment of worry with pumping equipment would get in touch with a Frick-Reid Store or write our main offices. Given the opportunity, we can be of great service.

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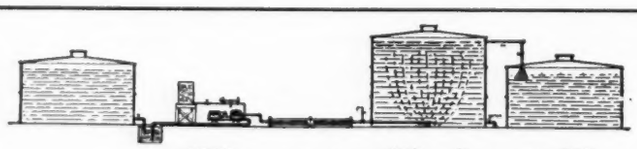

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Petroleum News, refers generally to the steady decline of Los Angeles Basin fields such as Santa Fe Springs, Long Beach and Huntington Beach, adding that "about the only lively spot in California is Torrance."

Daily average production credited to Torrance of 33,000 barrels last week indicates a normal rise toward the level set for it, January 1, in **National Petroleum News** estimates of 40,000 barrels daily. Forecasts for that date were made of 735,000 barrels total California daily production, assuming that none of the shut-in production of roughly 107,000 barrels is opened up until after that time.

"Don't be misled by all the talk of reviving operations in the San Joaquin Valley," writes this observer after a trip through the various fields of that part of California. "They are not doing a thing down there but pushing out the edge contours a little bit further from some of the old fields. None of the 'wildcats' are showing much promise at this time."

Reverting to the southern California situation he says that the three big fields of the Los Angeles Basin have "hit the skids for fair," a condition already shown in weekly averages of daily production; but, he adds, "I am not so sure such a condition will continue indefinitely by any means," the latter statement indicating a belief that these fields are leveling down toward the semi-settled stage where percentage declines may be expected to be slower.

DENVER, Dec. 6.—The Union Pacific Railroad Co. may extend its line from Fort Collins, Colo., to the new Wellington field where the big well of the Union Oil Co. of California is located. An application has been filed with the Interstate Commerce Commission at Washington for permission to build an 18-mile branch northward to the Buckeye ranch upon which the well is located and this has been followed by the placing of a crew of surveyors in the field under the supervision of assistant engineer W. J. Woodworth, of Omaha, to locate the line.

PITTSBURGH, Dec. 8.—The Nicclay Oil & Gas Co., Wheeling, W. Va., has leased 500 acres in Nicolas and Clay counties, West Virginia, and will start drilling in a few weeks. Jesse V. Sullivan, former newspaper man and secretary to Gov. E. F. Morgan, is vice-president of the company and C. E. Lang & Co. is marketing an issue of common stock in Wheeling, the bulk of which has been subscribed. Clarence H. Dinnon is president and Freeman Carte is secretary-treasurer.

PITTSBURGH, Dec. 8.—The late E. J. Murphy, Washington, Pa., oil operator, whose death occurred several days ago, left an estate of $150,000 which was bequeathed to relatives.

Producer Will Benefit By Trading His Gas For Vacuum Service

By Alexander B. Morris

A SITUATION has been developing for several years in the natural gasoline business that the present low prices for gasoline have brought acutely to a head. This is the question of the value to the oil producer of the vacuum kept on his wells by the purchaser of his casinghead gas.

During the years 1917 to 1920 inclusive, gasoline commanded such high prices that most gasoline plants made handsome profits, the competition for gas contracts was brisk, and the producer benefitted by the advantages which the successful bidder for his contract had to offer. In this way a great number, if not the majority of gasoline companies were organized under the obligation, not only to purchase the gas at the prevailing rates per thousand cubic feet, but also to maintain a specified degree of vacuum on the wells in taking this gas.

Various sliding schedules, making the price to be paid for the gas dependent upon the Chicago tank wagon price of gasoline, were evolved. When reduced to a percentage basis, these prices averaged the equivalent of a royalty of from 28 to 35 per cent of the gross sales of the gasoline plant. Such a charge of raw materials is a very severe one for a business involving the small plant salvage ratio and the hazards of this one. In addition to this the purchaser had to buy the gas at the well, install and maintain all gathering lines and meters, and in many cases erect and operate separate vacuum stations in order to fulfill their contracts.

All these conditions were endurable as long as boom times lasted; and on properties where the gas volume is very large may even now be borne without great hardship. But where plants, erected in 1918 or earlier, and drawing their gas from properties which were then sufficiently settled in production to permit of the profitable use of their gas in a plant, are now compelled to pump the wells as well as to gather and pay for the gas, reasonable operating profits are very difficult to show; and many such plants now are under the necessity either of closing down or revising their working arrangements.

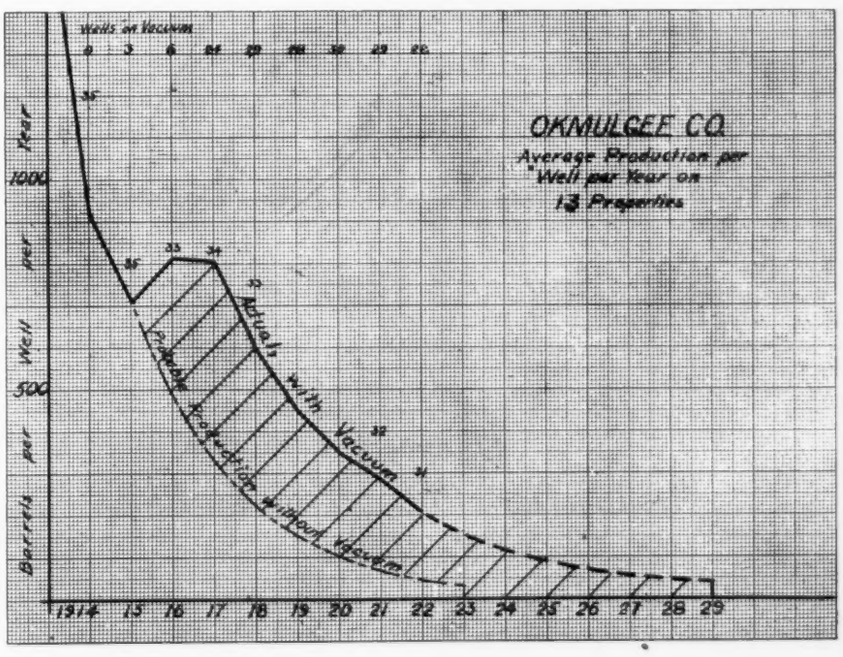
Some manufacturers have been successful in accomplishing this latter alternative by making new deals with the producers from whom they buy their gas, to trade gas for vacuum: that is, to agree to maintain sufficient vacuum on the wells in exchange for all gas that they may thus obtain. That this results in material benefits to the manufacturers is clear, since it relieves them of making monthly cash payments equal to about 30 per cent of their gross sales. When these sales have shrunk, as at present, to a point little if any in excess of bare operating costs, this factor becomes the controlling one in determining whether or not they shall continue in business. That it also results in marked advantages to the producer will appear from what follows.

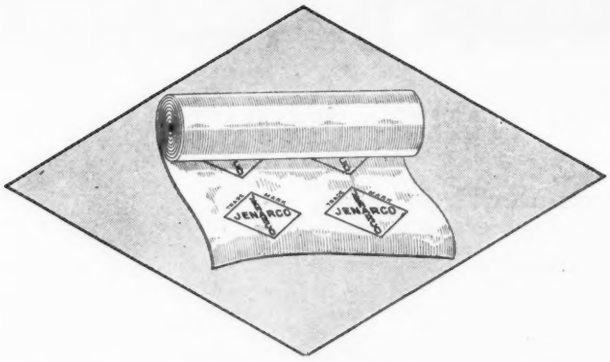
Let us consider the condition which actually prevails in one of the oldest and most profitable casinghead gas territories in Oklahoma. The field is practically covered by two gasoline manufacturers, each owning several plants. In times past the competition between these groups for gas supply was intense, but now one of these companies has succeeded in agreeing with his gas vendors upon the "vacuum for gas" trade explained above. The other is having considerable difficulty in making the parties from whom he purchases see how they can profit from such an arrangement. He is thrown upon the horns of a dilemma: shall he shut down indefinitely and run the risk of forcing his producers to hook up with the rival plants in order to save their properties, or shall he continue to operate at a loss, hoping for better conditions in the indeterminate future? If he takes the former course, it is doubtful if he would be able to coax his flock together again, since they will be unwilling to break off their current connections without large inducement. In this event he might as well shut down now and junk his plants. If he takes the latter course, it is only a question of time before the sheriff junks them for him.

The accompanying charts show clearly the beneficial effect of vacuum on wells in two important casinghead gas regions of Oklahoma. The properties used in compiling these charts were chosen at random, the only requirement being that all should have been producing oil for a sufficiently long time before the use of vacuum to permit of a reasonably accurate estimate of their future production without it. The properties used had all been producing at least three years prior to hooking the wells on a gasoline plant, and many of them had been producing for six or seven years; so that in every case they could be called thoroughly settled when vacuum was first used.

The heavy chart line on each chart indicates the actual average production per well per year, the number of producing oil wells entering into the average for each year being noted alongside the curve. The number of wells connected to the plant in each year is also shown. The light broken line is the estimate of future production made on the basis of information available at the time that vacuum was first used, and a rate of decline most favorable to the producer has been used in projecting these curves. The shaded area between the curves indicates the actual amount of ADDITIONAL oil produced by the wells on these properties as a direct result of vacuum.

In every case the additional development done on these groups of leases, and the rate of abandonment of wells is indicated by the number of wells producing in each year. As in every case the total number of wells is so great relatively to any single year's increment,


Wells on Vacuum
OKMULGEE CO.
Average Production per Well per Year on 13 Properties
Barrels per Well per Year
1000
500
Actual with Vacuum
Estimate without Vacuum
1914 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29



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Packing in sheets or cut gaskets for every purpose:

For saturated steam, water, or air, at high or low pressures, use *Jenkins* '96, *Jenarco*, or *Jenkins Magnolia* packing. For oils use *Jenkins Oiltite*, and for super-heated steam, use *Jenkins Compressed Asbestos Jointing*. They are tough, flexible packings that make tight joints.

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Producers-Refining-Transporting
Facilities

Oil Men Play Big Part In "Y" Campaign

By Special Correspondent

SHREVEPORT, Dec. 1.—In an 8-day campaign here to raise a half million dollar fund with which to establish a Y.M.C.A. building, a total of $539,534 was raised, the original goal being exceeded by $39,534, to which after the campaign was formally closed about $1,250 more has been added.

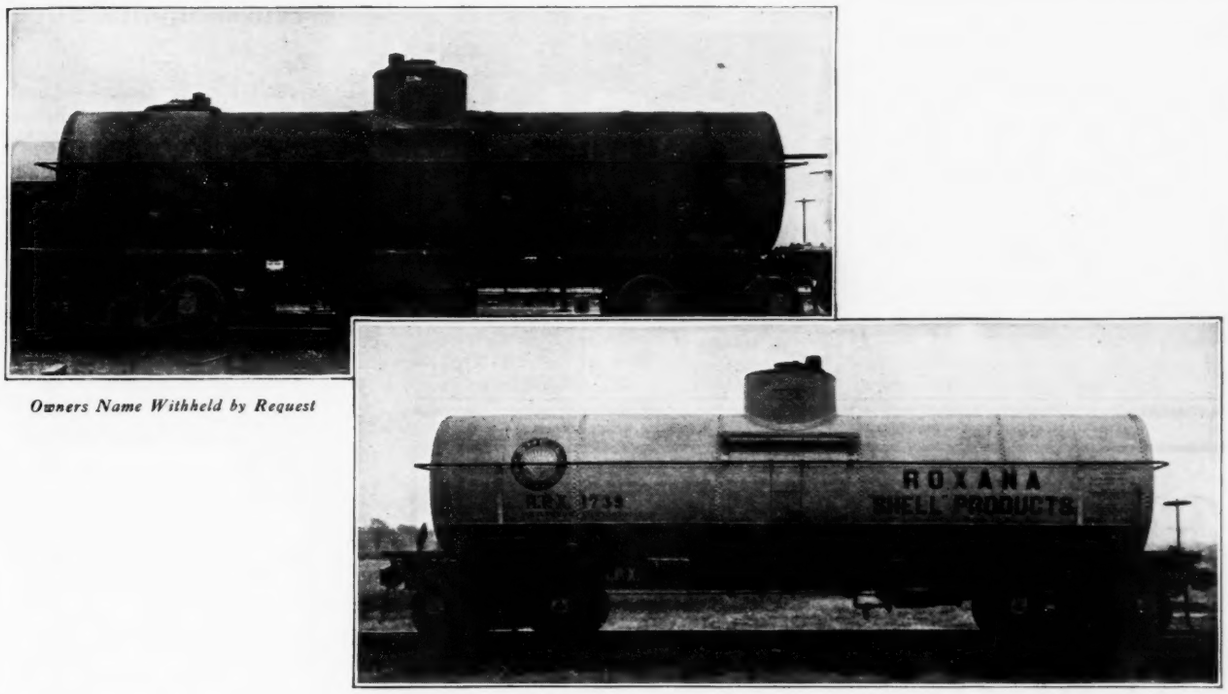
There was a contest between 20 teams of at least 10 workers each, the team securing the highest amount during the eight days being offered the silver loving cup which is to be placed in the 'Y' building, with names of the team members engraved on it, as the first trophy of the local 'Y'. The winning team was headed by W. C. Taylor, purchasing agent of the Standard Oil Co. of Louisiana, having obtained 385 subscriptions representing more than $38,000 in money. Another member of the oil fraternity on this team was Hugh F. Austermell, secretary of the Standard Pipe Line Co. Still another member was Dolph Frantz, Shreveport representative of **National Petroleum News.**

Dozens of men identified with the oil fraternity participated in the campaign, and several of the companies went 100 per cent for the fund. The Oil Fields Welfare Association subscribed $1,500 for furnishing rooms in the building, the rooms to bear plates with the association's name. This subscription was turned in by Ray F. McGrew of the Standard Oil Co's. pipe line department, who also was highest bidder for a fine Persian rug donated to the 'Y', Mr. McGrew's bid being $1,000. George O. Baird and Eugene Palmer and Sam W. Mason, all identified with the oil industry, were the other bidders.

Clyde M. Bennett, vice president of the Louisiana Oil Refining Corp., and C. R. Minor, head of the Gulf Refining Co. here, were among the special gifts committee for the 'Y.' The initial gift, an $80,000-site, was made by Jas. E. Smitherman and Eugene G. Palmer, who headed the group discovering the Haynesville field. Their big gift made possible the recent campaign, which raised the largest amount ever raised in a southern city, regardless of population, for a Y project, it is officially announced.

WASHINGTON, Nov. 30.—The gas shortage about Moncton has revived interest in some old shale deposits in Alberta county, New Brunswick, which have in the past produced some oil. Investigation is under way now to ascertain whether it is possible to utilize these shales on a commercial scale, according to Vice Consul Conger Reynolds at Halifax.

WASHINGTON, Nov. 30.—Thirteen prospecting permits were issued by the Netherlands Indian government during June and July for petroleum rights in Java and the Island of Timor, says R. R. Winslow, American Vice Consul in Soerabaya.



Owners Name Withheld by Request

Courtesy Roxana Petroleum Co.

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Well maintained and good appearing equipment is of inestimable value to your company and its products from an advertising standpoint.

A well painted tank car is equal to two bulletin boards in every town that the car goes through and every crossing that it passes.

Proper painting operations reduce cost of maintenance and protect investment in addition to keeping cars in service.

DEGRACO TANK CAR PAINTS have long been a standard with car owners who demand real service with good appearance.

At your service for better painting.

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- Tank Car Paints
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DEGRACO PAINTS are sold through branch offices with warehouse stocks in all principal cities.
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DEGRACO PAINTS VARNISHES ENAMELS
All Colors for All Purposes

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State.....
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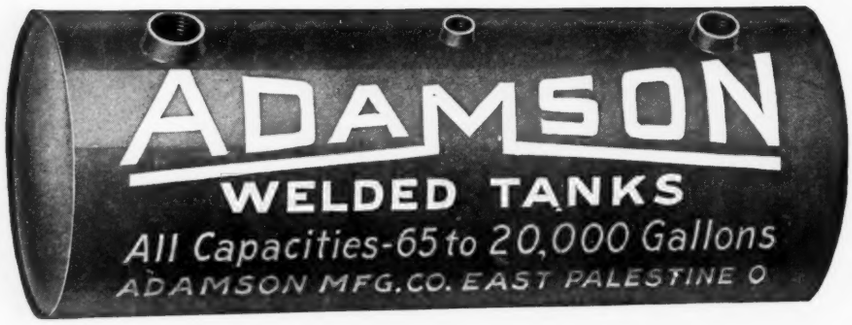

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CYLINDER ENGINE CORDAGE

RED AND PALE PARAFFINE OILS

California Shipments Show Small Gain

By Special Correspondent

LOS ANGELES, Dec. 6.—Crude oil shipments from this harbor during the week ending Dec. 1 were 100,000 barrels in excess of the previous week's shipments, the total being 1,882,000 barrels against 1,745,000 barrels.

Twenty-seven tankers carried the crude away, 10 of them being consigned to Atlantic coast ports, 3 for foreign ports and 14 for points on the Pacific coast. The shipments were as follows:

Nov. 24

Lubrico for Richmond, 66,000 barrels crude for Standard Oil.

Tejon for Ebisu, 60,000 barrels crude for Mitsui and Co.

Cecil County for Fall River, 60,000 barrels crude for Walker & Daly.

Nov. 25

La Purisima for San Francisco, 58,000 barrels crude for Union Oil.

Los Angeles for San Francisco, 45,000 barrels crude for Union Oil.

Strimbus for Balboa, 53,000 barrels crude for Anglo-Saxon Pet. Co.

Nov. 26

Gulfpoint for New Orleans, 55,000 barrels crude for Gulf Refining Co.

R. J. Hanna for San Francisco, 55,000 barrels crude for Standard Oil.

William Green for New Orleans, 56,000 barrels crude for Pan American.

India Arrow for Shanghai, 65,000 barrels crude for Standard Oil.

Delaware Sun for Philadelphia, 50,000 barrels crude for Shell Co.

Ondo for Tokuyama, 65,000 barrels crude for Japanese navy.

Nov. 27

S. C. T. Dodd for Richmond, 75,000 barrels crude for Standard Oil.

Pennsylvania for Philadelphia, 82,000 barrels crude for Standard Oil.

La Purisima, Port San Luis, 45,000 barrels crude for Union Oil.

Trimountain for San Francisco, 83,000 barrels crude for Standard Oil.

Paul Shoup for Avon, 82,000 barrels crude for Associated Oil.

Nov. 28

Los Alamos for Martinez, 39,000 barrels crude for General Petroleum.

Lubrico for Richmond, 66,000 barrels crude for Standard Oil.

Nov. 29

Shreveport for Fall River, 65,000 barrels crude for Walker and Daly.

Halo for New York, 68,000 barrels crude for Atlantic Refining Co.

R. E. Hopkins for Philadelphia, 74,000 barrels crude for Tidewater Oil Co.

Sandon Hall for Boston, 70,000 barrels crude for Norton, Lilly & Co.

Nov. 30

M. H. Flager for New York, 75,000 barrels crude for Standard Oil.

R. J. Hanna for Richmond, 63,000 barrels crude for Standard Oil.

La Placentia for Martinez, 76,000 barrels crude for Union Oil.

F. H. Hillman for Portland, 117,000 barrels crude for Standard Oil.

BILLINGS MONT., Dec. 6.—R. J. Wallace, formerly of Bartlesville, Okla., has applied for franchise in Columbus, Mont. for the distribution of natural gas. The supply would come from developed production in the Lake Basin field. Mr. Wallace came to Montana as manager of the Barnsdall-Foster interests, but left that company about a year ago.

Association Will Inquire Into Cementing Process Claims

By Special Correspondent

SHEVEPORT, Dec. 6.—Following a meeting of its legal committee held at the offices of Secretary Jos. B. Elam here, the Mid-Continent Oil and Gas Association, Louisiana-Arkansas division, has designated a special committee to fully investigate, with a view to protecting the interests of operators of this territory, the case of Carl P. Halliburton, now a resident of Oklahoma, who claims that rights he holds under a certain process of cementing wells are being infringed upon.

The committee consists of Judge T. M. Milling, counsel for the Standard Oil Co. of Louisiana, headquarters at Shreveport; John Y. Snyder, Independent operator here; and Clyde M. Bennett, vice president of the Louisiana Oil Refining Corp., formerly president of the Louisiana-Arkansas division of the Mid-Continent.

According to Secretary Elam, Halliburton, it is claimed, has leased for the states of Louisiana, Arkansas, Texas and Oklahoma, patent rights secured by Perkins & Double on a process for cementing wells. Application for the patent was made by them in the latter part of 1919, it is said, and the patent was granted Sept. 27, 1921. The application for patent contains the usual and necessary allegations as to discovery of the process, newness and novelty of it. McCann & Harper, of Shreveport are said to have used a similar method in the old Caddo field where McCann & Harper did much drilling prior to issuance of patent.

Recently all operators in the various fields have been written to, demanding certain fees from the operators for each well drilled heretofore in which this process was used and warning them to make arrangements for its future use.

"The Mid-Continent, Louisiana-Arkansas division, has appointed a committee to go into the question fully and protect the interest of the operators in Louisiana and Arkansas," stated Secretary Elam. He also stated that the association had called attention of the general association, as well as of the different divisions, to the situation for the purpose of arriving at some uniform plan of procedure to cover the entire Mid-Continent area.

Halliburton, it is claimed, has had two cases tried, one in California and the other in Oklahoma, according to Mr. Elam, in which the validity of his patent was sustained, it is reported, but the association here does not know just what the allegations were or exactly what the decision was based on and set forth.

The committee is to go thoroughly into the matter to see if there have been any infringements anywhere in this territory and to outline plans for protection of the operators' interests and rights fully. Practically all operators hereabouts since 1900 have received notices of the Halliburton claim and warning. McCann & Harper, it is claimed, passed their idea on to other operators, as is and has been customary in this territory; when a certain condition is, overcome and a certain problem solved, the information has been passed on to others, and this, it is stated, is what McCann & Harper did; they had no patent, it seems, but gave the others the benefit of their discoveries.

Mr. Elam expressed belief that the association would be able to protect the operators in this territory.

Industrial Notes

Mathieson Alkali Works, Inc., New York, has put out a booklet describing the hypochlorite of lime process for treating gasoline and kerosene. The process was developed by A. E. Dunstan, technologist with the Anglo-Persian Oil Co., and one of the foremost petroleum scientists of Great Britain. The process is used at the Anglo-Persian plants. Mathieson Alkali Works acquired the American rights to the process from the Anglo-Persian.

According to the booklet, the hypochlorite process is being successfully used by a number of American refineries. Liquid chlorine, which is the basis of the treating process, is shipped in multiple unit tank cars from the Mathieson plant to the refinery and the one-ton steel containers in which the stuff is shipped are connected up directly with the treating equipment.

Advantages of the hypochlorite process as compared with sulphuric acid treatment, according to the booklet, are:

"The hypochlorite process improves the odor and color and removes such sulphurous compounds as develop color and bad odor while gasoline and kerosene are in storage. Moreover, refining with hypochlorite solution seems to be universally applicable to desulphurizing all the gasoline and kerosene distillates from all types of crude petroleum.

"Refining by hypochlorite may be carried out according to either of two principles: (1) complete desulphurization or (2) refining so as to pass the usual tests and be satisfactory as regards color, odor and keeping qualities. The latter method requires the use of much less reagent and is accordingly cheaper. The distillate may usually be made entirely sweet in odor and negative to the copper corrosion and doctor test without actually removing all the sulphur present."

Davidson Chemical Co., New York, it is reported, has closed a contract with the Vacuum Oil Co. for the use of the silica gel process of refining gasoline and it is understood that the Vacuum is erecting a treating plant at its Paulsboro, N. J. refinery that will have a capacity for treating 5000 barrels of gasoline a day by the silica gel process. The contract was made through the Silica Gel Corp., owners of the American rights to the silica gel process and a subsidiary of the Davidson Chemical Co.

S. F. Bowser & Co., Fort Wayne, Ind., in a new catalog entitled, "How to Sell More Gas and Oil", emphasizes the need of personality and courtesy as business builders. Make the station and equipment attractive with paint and advertise, are other recommendations set forth in the little book. The Bowser line of gasoline dispensers, and lubricating oil pumps and tanks are pictured and described.

The Heil Co., Milwaukee, Wis., announces the appointment of two more distributors of Heil bodies, hoists and tanks. They are the Kranz Automotive Body Co., Gravois and Minnesota streets, St. Louis, and the Shop of Siebert, 614 Southward avenue, Toledo, O. They bring the number of Heil distributors up to 20.

The Youngstown Boiler & Tank Co., Youngstown, O., has issued a new bulletin, No. 500, picturing its standard line of bulk and service station, refinery and oil field tanks and other fabricated plate goods. Specifications and tables, including gauge-stick readings of capacities at various levels in horizontal storage tanks.

Auto Table Co., Richmond Hill, New York city, has issued a new circular showing its all steel rack to be used for oiling and greasing of automobiles at services stations and garages. The company reports it already has sold hundreds of tables to oil companies throughout the country.

United States Air Compressor Co., Cleveland, has recently been exhibiting a new heavy duty water cooled compressor with copper intercooler, large area plate valve and an improved lubricating system.

Link Belt Co., Philadelphia, will exhibit at the Chicago good roads show in January a portable loader with crawler thread. It is claimed this device will cut a 20-foot path through any material by means of a swiveling feature, one of the principal features, which the manufacturers say, enables it to swivel and swing independently of the wheel or

Gas oil is a by-product of the Dubbs Process when cracking fuel oil

And when we say cracking fuel oil by the Dubbs Process we mean running it raw to the Process

Converting fuel oil into gas oil and then cracking, isn't cracking fuel oil—it is cracking gas oil and it is converting a large part of the gas oil back into fuel oil

Every product of the Dubbs Process when cracking fuel oil has an equal or greater value than the original charging stock

Universal Oil Products Company
Owners of the Dubbs Process
208 South La Salle Street Chicago

thread base. It can back into a pile, dig, swivel and elevate at the same time. it is claimed, or it can do any of these operations separately at the will of the operator.

Wayne Tank & Pump Co., Fort Wayne, Ind., has been awarded decision in a suit brought against it by the Permutit Co. of New York which charged infringement in a zeolite water softening process. Zeolite is a mineral substance mined in New Jersey and the court rules the Permutit Co. has no more right to the exclusive use of the mineral than a man would have to a patent on "water running down hill."

C. J. Tagliabue Mfg. Co., 18 33rd street, Brooklyn, N. Y., has issued a new catalog, No. 699, on oil testing instruments. A bulletin on the Tag-Mono gas analysis recorders also is included. The Tagliabue company recently issued a revised edition of the "Tag Manual" for inspectors of petroleum.

Blaw-Knox Co., Pittsburgh, announces that on Dec. 1 Charles K. Wehn was put in charge of the company's special department devoted to Blaw-Knox standard steel buildings and structural steel in Illinois and adjoining states with headquarters in the People's Gas building, Chicago.

United Iron Works, Inc., Kansas City, Mo., has just issued a new catalog and price list for its standard and extra heavy pipe fittings, refinery equipment, oil well supplies, steel tankage, mechanical refrigeration, centrifugal and deep well pumps.

Wilson Welder & Metals Co., New York, has just published a catalog which is a short treatise on welding. Illustrations show truck tanks, bulk station and crude storage tanks.

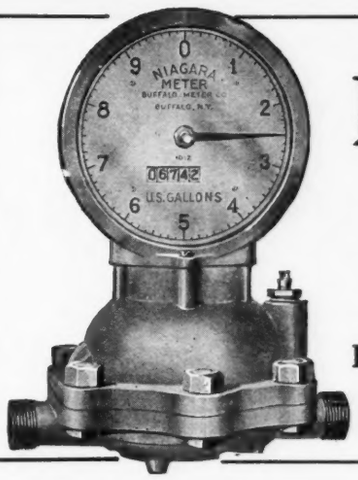
McJunkin Equipment Co., 706 Park building, Pittsburgh, is now handling the refinery and distributing station equipment business formerly handled by the McJunkin Supply Co.

Meurer Steel Barrel Co., 23 W. 43rd street, New York city, announces the appointment of R. S. Mueller, as a district representative with headquarters in the Vickers building, Baltimore.

Linde Air Products Co., New York, has published a booklet of 122 pages on iron welding by the oxy-acetylene process. It contains many illustrations.

Gibb Instrument Co., Bay City, Mich., has issued a bulletin showing the use of its Zeus arc welder in the tank field.

NEW YORK, Dec. 7.—Vacuum Oil Co. has contracted with Davison Chemical Co. for use of the "silica gel" refining process. It will be installed at the Vacuum's plant at Paulsboro, N. J.



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Make your customers permanent

RAND McNALLY PATENTED SELF-INDICATING COUPON BOOKS dispense with costly bookkeeping. They eliminate the constant handling of cash, with attendant errors, disputes and waste of time. They provide a sure and automatic check on daily sales. They are convenient for your customers to use, and insure you of their continued patronage.

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The "stepped" feature of RAND McNALLY PATENTED SELF-INDICATING COUPON BOOKS makes for quick and accurate detachments. When your stations are the busiest, your men can tear out the right coupons without loss of time and without mistakes, for the various amounts are shown at a glance by the "stepped" feature.

Write us to-day for complete information about RAND McNALLY COUPON BOOKS with the "stepped" feature. We will be glad to submit samples and to explain in detail the simplicity and economy of their use.

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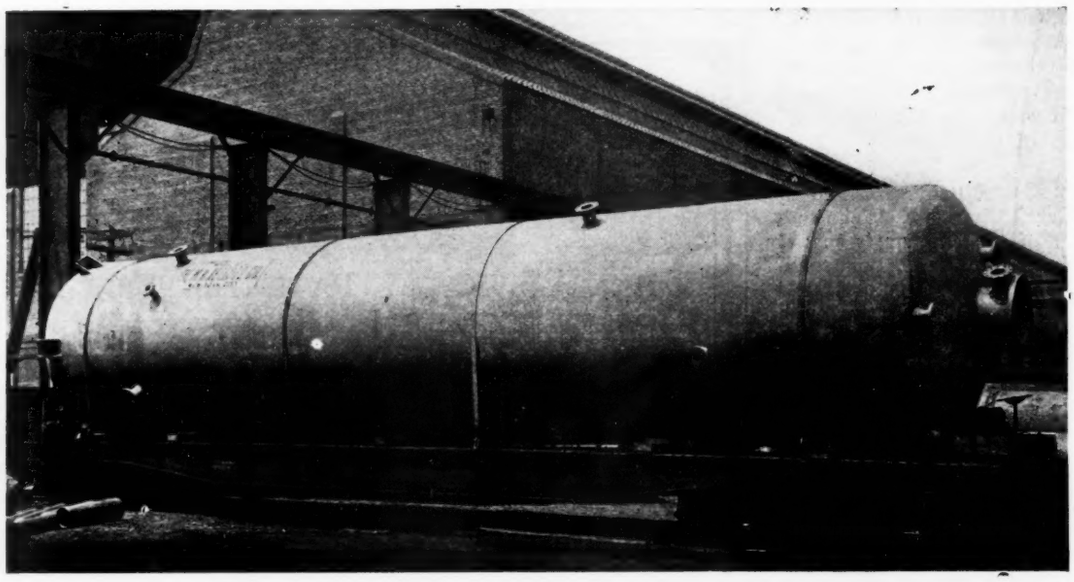
Use RAND McNALLY Official Auto Trails Maps to advertise your business

NO OPEN SEAMS! NO FIRES! NO SHUT DOWNS

This is what Kellogg Forge Welded high pressure oil stills will accomplish for your refinery.



WE have sold more than 2000 stills to 40 refiners. We believe this record to be conclusive proof of the supremacy of our product for high pressure and high temperature work.

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PAUL GERHARD, 307 KENNEDY BLDG., TULSA, OKLA.

The M. W. KELLOGG COMPANY

140 CEDAR STREET
NEW YORK CITY

Explains Aluminum Paint Statement

ST. LOUIS, Dec. 6.—In order to correct any wrong impression that might have been caused through the publication of a statement given out by the Bureau of Mines last August to the effect that aluminum paint was not practicable for use on out of door storage tanks because it would not stand exposure to the weather, H. Foster Bain, director of the Bureau of Mines has written William T Deacon, vice-president of the St. Louis Surfacer & Paint Co. as follows:

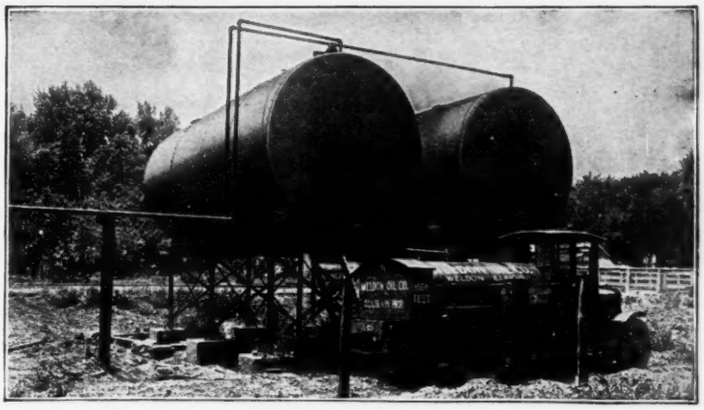
"I am enclosing a copy of the press notice that was sent out by this bureau, and you will note that the tests on the different paints were made by the Institute of Industrial Research, and that the statement that aluminum paint is not practicable for outside work was made by that organization. The experiments made by the Institute of Industrial Research were referred to in Bureau of Mines Bulletin 155, "Oil Storage Tanks and Reservoirs", by C. P. Bowie, and in making up the press notice covering the tests on paints that are being made by the Bartlesville Station, the Publications Division of the Bureau quoted from the tests that were published in Bulletin 155.

"The tests made by the Institute of Industrial Research were made several years ago, and I understand that important developments in the aluminum paint industry have taken place since that time. I am very sorry that this press notice has caused your company any embarrassment, and in view of the circumstances, it might be advisable to furnish a copy of this letter to those customers of yours *who on account of the statements that they thought were based on experiments conducted by the Bureau of Mines* have questioned the advisability of buying aluminum paint."

It is well known that oil companies are using aluminum paint to an increasing extent for covering gasoline storage tanks. **National Petroleum News** has published stories on its use on gasoline tanks and also on refinery fractionating towers where a refiner found it superior to ordinary paint on account of its heat-resisting qualities.

Title To Government

SHREVEPORT, Dec. 7.—A final decree awarding title to 160 acres of land valued at $30,371.65, held by the Gulf Refining Co., to the United States government, by an order of Federal Judge Jack, of western Louisiana, in April, 1922, was filed today in the state court here. The decree declares that the Gulf must pay to the government royalty amounting to $3,750 and interest. It sets aside as null and void a lease executed by Mrs. Ruth Robinson and Mrs. Alice Conley in favor of the Gulf and it also nullifies a patent issued by the state of Louisiana to the land in 1894.



Complete Equipment for Bulk Station Plant

Why get a piece meal job, when you can buy a complete installation from one manufacturer? Why take chances on parts not fitting—on delays in transportation—and, on a lack of centralized responsibility?

Leader engineers have planned and superintended the installation of many bulk station installations. Their services are free for the asking.

The above cut shows a very recent bulk station installation which includes the following Leader equipment:

2—15,000 RIVET-WELD Storage Tanks
(Riveted for strength—welded for tightness)
2—3 Pier Structural Steel Supports
2—Truck Tank Loading Racks
1—Double Line Tank Car Unloading Rack
1—360 Gallon—3 Compartment Truck Tanker
1—150 Gallon—2 Compartment Ford Truck Tanker
1—Twin Rotary Pump, known as No. 3600

The pump in the above installation is driven by a gasoline engine.

Besides the above, the Leader furnishes the necessary valves and fitting which go with each installation.

Be right first, and you're right last. Leader is sure to satisfy you. Why take a chance? An investigation costs nothing and may save you much "grief."

Write for our new bulletin on Bulk Station Equipment.

Leader "Safety First" air tanks satisfy both law and users. Accidents are expensive. Why take chances? Leader standard of air tank construction will not be lowered below the safety mark even though the customer agrees to be responsible.

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"Tanks you can Leader *buy—and forget"*

Wheeling Cans

For Oils and Greases

Five Gallon Square Cans

Plain or Lithographed

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Can Department **Wheeling, W. Va.**

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FLEXLUME ELECTRIC SIGNS give the filling station strongest advertising display. They are day signs as well as night signs—raised, snow-white, glass letters on a dark background. They combine the advantages of greatest reading distance, most artistic designs, and lowest up-keep cost.

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The American Petroleum Industry

by Raymond Foss Bacon, Ph. D. and William Allen Hamor, M. A.

It covers the chemistry, geology, technology, history and economics of the petroleum industry thoroly.

It places at the disposal of engineers, chemists and all engaged in this industry a complete summary of present day knowledge and practice.

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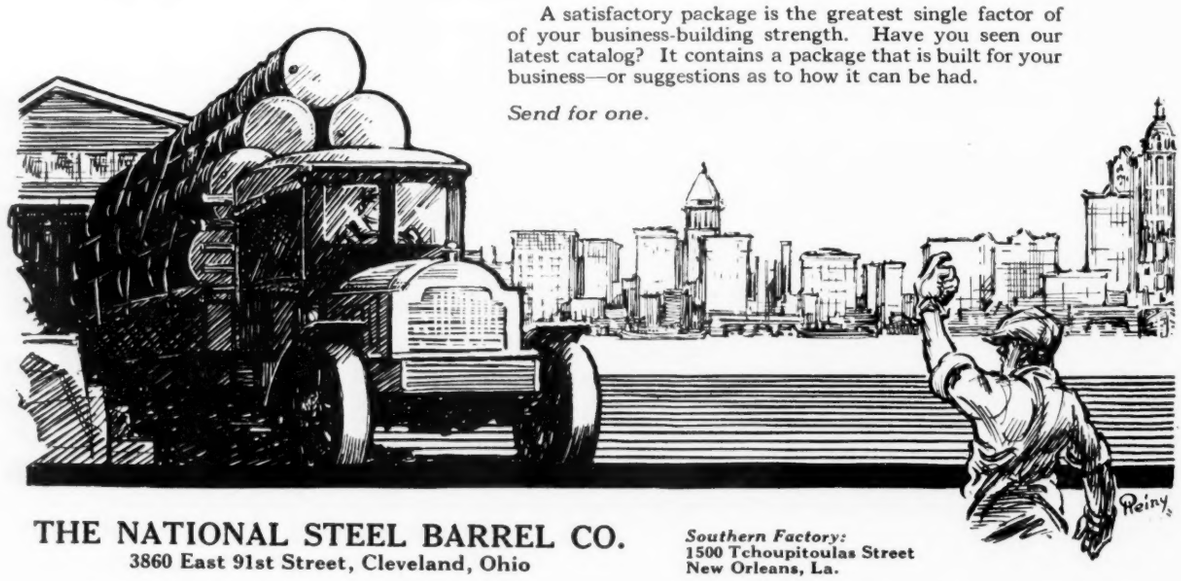
IT is then that you experience real package dependability. When urgently needed materials arrive with their quantity and quality intact, you come to fully appreciate the value and satisfaction that reliable packages yield.

Of how much greater importance to you, therefore, is the perfect delivery of your product to your customers?

National Steel Barrels are the approved standard packages of the world's largest shippers. Their big, burly walls of toughened steel save thousands of dollars yearly and strengthen customer-confidence continually.

A satisfactory package is the greatest single factor of of your business-building strength. Have you seen our latest catalog? It contains a package that is built for your business—or suggestions as to how it can be had.

Send for one.



THE NATIONAL STEEL BARREL CO.
3860 East 91st Street, Cleveland, Ohio

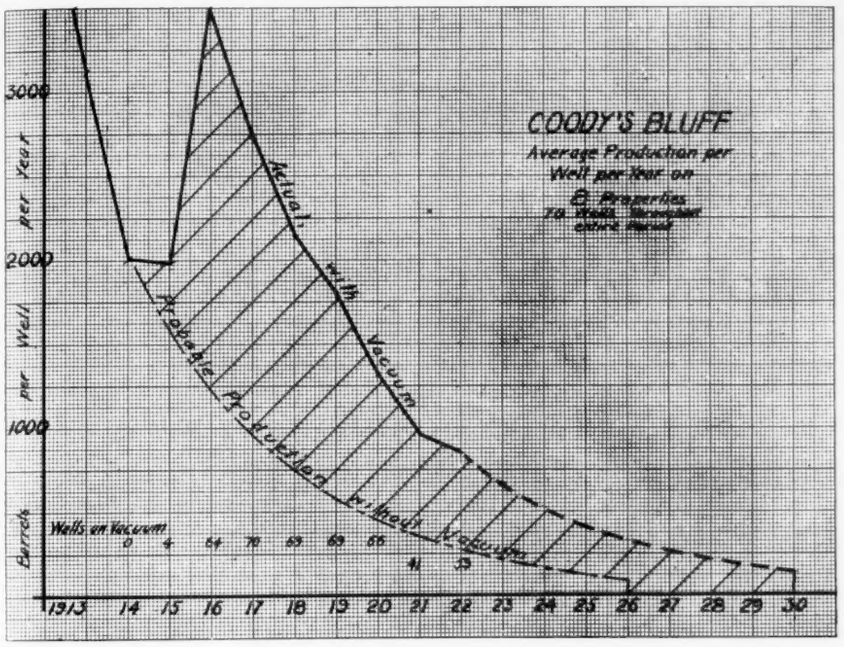
Southern Factory:
1500 Tchoupitoulas Street
New Orleans, La.

very little increase in the average production can be ascribed to the flush production of these new wells, especially when it is considered that this is all old territory, and any new wells would soon drop down to the average of the field.

Just what would be the effect upon the production curve should vacuum on these wells be abandoned cannot be definitely estimated. It is certain that within a year, at the longest, the average would drop to the corresponding point on the lower curve; and the probability is, that owing to so much more oil having been removed under vacuum than would have been produced normally, the average would drop materially below this point. It is thus seen that for the districts shown the removal of vacuum will render further operation of the wells unprofitable.

The gasoline manufacturers are generally willing to continue to maintain vacuum on these wells, provided they can obtain their raw material at prices which will keep them out of the red. The operation of vacuum plants is a heavy expense—greater than would be warranted by the production of any but very large properties—and itself constitutes a high cost for the gas thus obtained. Considering that the continuance of vacuum means to the producers several years additional life for their leases without any further investment on their part, it would appear to be good business judgment to meet the gasoline men's terms, and accept, as payment for the gas used, the increase in oil production which appears to be altogether dependent upon the continuance of vacuum.

The writer has similar data for most of the casinghead gas areas in Oklahoma, and the conclusions to be drawn from all agree with those deduced above. The operator of old properties who tries to exact cash payment for casinghead gas in addition to the benefits derived from the maintenance of vacuum on his wells is likely to find that he has killed the goose that is laying his golden eggs.


COODY'S BLUFF
Average Production per Well per Year on 8 Properties
Actual
with Vacuum
Probable Production if Vacuum Removed
Barrels per Well per Year
3000
2000
1000
Wells on Vacuum
0 4 64 70 69 69 66 41 35
1913 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Compares Two Well Known Fuels For Motors

ARDMORE, OKLA., Dec. 6.—Dan Corcoran, sales manager of the Cameron Refining Co., recently made some computations showng what the present value of gasoline was in terms of other commodities.

Among the conclusions he reached was the exchange basis at that time between gasoline and corn liquor. He found that for the price of one gallon of the forbidden spirits, made in a plant of practically no investment, one could buy 154 gallons of the best grade of gasoline, refined in a plant that cost more than a quarter of a million dollars.

And, aside from the discrepancy in quantity, there is also a great difference in mileage. With that amount of gasoline, the trip from Ardmore to Tulsa and back could be made nearly five times while on the gallon of liquor one could be certain of going only from the point of intake to the police station.

SHREVEPORT, Dec. 6.—J. F. VanCleve, president of the V. K. F. Drilling Co., discoverers of the Smackover oil field, is convalescing from an operation for appendicitis at the Highland sanitarium here.

ROBINSON, KAN., Dec. 6.—Three tanks, belonging to the Kimmel Oil Co., that had just been filled with gasoline, were burned to the ground last week when a spark from an electric wire ignited the gasoline. Officials of the company, fearing an explosion, shot the tanks full of holes to enable the gasoline to burn more quickly, according to Jere Kimmel, president of the company.

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Boynton Steam-refined cylinder stock

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Gasoline—Kerosene

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Refineries:

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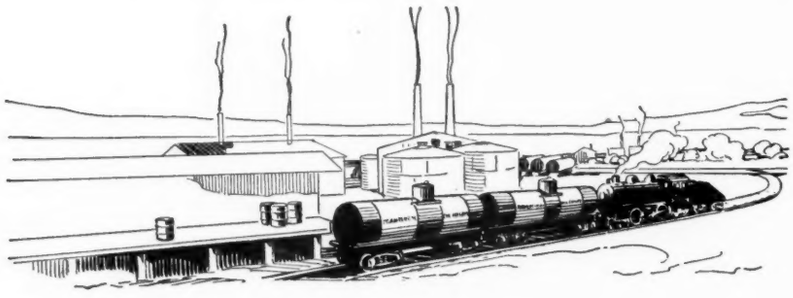


23-MW-

REFINERY-TANK WAGON MARKETS

Export And Domestic Purchases Strengthen Group 3 Market

Staff Special
TULSA, Dec. 8

AFTER a rather dull week resumption of export buying of high gravity gasoline together with a better demand for domestic goods has strengthened the Mid-Continent refinery market and caused fractional advances in prices today. With the exception of natural gasoline every product offered in the southwest is strong. Fuel oil has been a feature throughout the week, advancing in price and becoming increasingly scarce.

Sinclair Refining Co. has placed an order with Cosden & Co. for 2,000,000 gallons of 64-66 gasoline for export. Siuclair has also entered the general market buying the same grade of goods. With offers of 8¾ cents for 64 gasoline for December delivery buyers are finding difficulty in satisfying their needs.

Scarcity in Texas

It appears impossible for the exporters t obtain more high gravity export gasoline out of north Texas before January. And for January delivery the refiners in that area are not inclined to take orders at the present market.

In Oklahoma the exporters are finding there is little high gravity material in storage and that production has been switched to Navy since the prices for lighter products have not maintained a sufficient margin over Navy to warrant taking the cream off the stream. If they require any large amounts of gasoline it is possible that they may have to raise their offers again. Current bids are ¼ to ½ cent hgher than the price which has been paid on recent orders.

Navy Prices Higher

For the first time this week all 6½ cent Navy gasoline has been eliminated from the market. Marketers who have been shopping closely throughout the field have had no success in placing orders for material to be resold at 6¾.

While there are some plants still offering Navy to the trade at 6¾ cents a number have raised ¼ cent. Empire Refineries, Inc., posted 7 cents today. Refineries in the Enid district are all quoting that figure. Skelly Oil Co. has no goods to offer for the present in common with a number of other plants.

Generally speaking most of the plants in Group 3 are well supplied with orders for from 10 days to the first of the year. The generally good condition of the market is indicated by the readines with which it responds to even a small increase in buying.

Runs Not Increased

Taken as a whole the refineries in the Mid-Continent are not increasing their runs appreciably since the better feeling has invaded the market. There has been some increase but it has been almost entirely due to the renewed activity of the larger companies such as Sinclair and the Standard of Kansas in Kansas and Sinclair and Cosden in Oklahoma.

Weekly statistical reports of the Western Petroleum Refiners Association during November have shown little change from week to week. The report for the week ended Dec. 1, shows 126 refineries with a still capacity of 479,850 barrels running a daily average of 287,096 barrels as compared with 312,156 barrels per day during the week ended Nov. 24. During the week ended Nov. 3, when the report was not so complete as at present 109 refineries with a still capacity of 412,250 barrels maintained a daily average of 315,202 barrels. Although the association added reports from 17 plants with a capacity of 67,600 barrels during the month the total amount of crude reported run was less.

A comparison of the October runs of Oklahoma and Kansas plants as reported by the Bureau of Mines shows a daily average of 156,425 barrels or 93,769 barrels per day less than in the corresponding month of last year. The decrease in operations was 39 per cent.

Gasoline Stocks Reduced

In judging the present strength of the Mid-Continent market it is notable that although the Oklahoma and Kansas plants produced 1,224,000 gallons of gasoline less per day in October this year than in October, 1922, sales averaging 3,339,203 gallons per day represent an increase over last year of 21,018 gallons per day.

Stocks of gasoline on hand at all refineries in Oklahoma and Kansas on Nov. 1 were 155,156,463 gallons representing a reduction of around 20,000,000 gallons during the month. While it is still a month before Bureau of Mines figures on stocks at all refineries in the Mid-Continent will be available there is a strong indicaton that the month of November will reveal a further reduction of reserves. In its report for Nov. 3 showing stocks of gasoline at 109 plants the refiners association showed a total of 102,433,904 gallons while on Dec. 1, with 17 additional refineries reporting total gasoline stocks were 98,622,873 gallons. A reduction in Mid-Continent gasoline stocks in November of this year is in sharp contrast with November, 1922, when the increase in stocks was around 17,000,000 gallons.

Railroads Help Fuel

Railroads appear to have been the chief factor in bringing strength to the fuel market. The buying begun recently has continued steadily. The result has been that the small surplus on hand has been depleted and virtually every plant in the field is manufacturing and shipping on a hand to mouth basis.

Considering the contract requirements of Group 3 refiners there has been little surplus of fuel on hand at any time in recent months. Bureau of Mines statistics show stocks of gas and fuel oil Nov. 1 to be only 97,771,531 gallons in Oklahoma and Kansas. At the current rate of sales this is only about a 30-day supply.

Industrials have not been heavy fuel oil customers of the Mid-Continent during the past few months due to general manufacturing conditions. But at the same time producton has been low due to the slow rate at which crude has been charged to the stills of refineries in this area. The main reason why fuel oil has followed the railroad contract price fairly closely has been the necessity of refiners to keep all stocks at a low level for financial reasons. They have continuously sought to overcome buying resistance by shading their prices. North Texas has been a large factor in the market by changing the directon of its fuel movement to Indiana marketing territory.

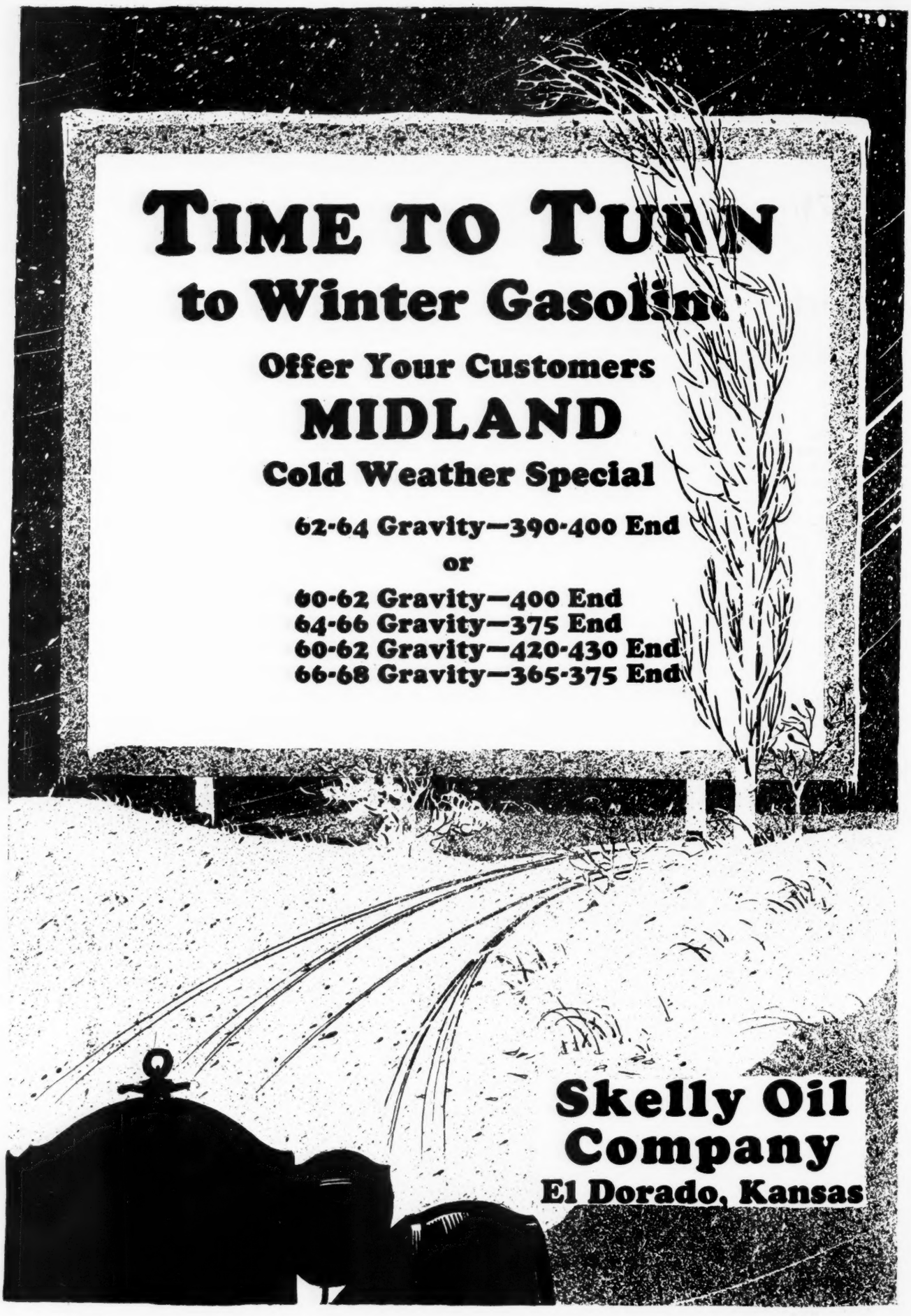
With stocks low, north Texas not a current factor and railroad buying freely on the spot market, it is the opinion of many refiners here that fuel will be stronger during the remainder of the month with prices advancng. From a low of 67½ cents per barrel two weeks ago fuel has advanced until at present it is difficult to buy at 75 cents. Many refiners are booking orders at 80 cents and a number assert that they are sold up past the first of the year and are unable to quote at any figure.

Gas Oil Stronger

Gas oil has strengthened to a certain extent in sympathy with fuel and as a result of some buying activity. Little, if any, is available by close shopping as low as 2¼ cents and a number of refiners are quoting nothing less than 2½ cents.

The past week has seen some small additional buying of kerosne for export where buyers were able to find a

(Concluded on Page 89)


TIME TO TURN
to Winter Gasoline
Offer Your Customers
MIDLAND
Cold Weather Special
62-64 Gravity—390-400 End
or
60-62 Gravity—400 End
64-66 Gravity—375 End
60-62 Gravity—420-430 End
66-68 Gravity—365-375 End
Skelly Oil Company
El Dorado, Kansas

Refinery Markets On Light Oil Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

GASOLINE AND NAPTHA

PENNSYLVANIA	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
50-52 Naptha	9 - 9¼	9 - 9¼	9½- 9¾
54 Naptha	9¼- 9½	9½- 9¾	9¾-10
58 Gasoline	9¾-10	9¾-10	10 -10¼
60 Straight-run gasoline	10½-10¾	10½-11	10½-11
62 Straight-run gasoline	11¼-11½	11½-12	11½-12
64 Straight-run gasoline	13 -13¼	13 -13¼	13 -13½
68 Straight-run gasoline	16 -16½	16½-17¼	16½-17
68-70 Blend, 450 E. P	-10	-10¼	-10¼
60-62 Blend, 450 E. P	-10	-10¼	-10¼
62-64 Blend, 450 E. P	-10	-10¼	-10¼
66-68 Blend, 440 E. P	-10½	-10½	-10½
68-70 Blend, 440 E. P	-10½	-10¾	-10½
68-70 Blend, 420 E. P	-10¾	-10¾	-10¾
OKLAHOMA			
48-50 450 E. P. naptha	5¾- 6	5¾- 6	5½- 5¾
50-52 450 E. P. naptha	6 - 6¼	6 - 6¼	5¾- 6
56-58 450 E. P. gasoline	6¼- 6¾	6¼- 6½	6 - 6¼
58-60 (New Navy) 437 E.P.131i.b.p.	6¾- 7	6½- 6¾	6¼- 6½
60-62 400 E. P. gasoline	7¾- 8	7½- 7¾	7¼- 7¾
64-66 375 E. P. gasoline	8¾- 9	8½- 8¾	8½- 8¾
68-70 350 E. P. gasoline	9½-10	9¼-10	9¼-10
NORTH TEXAS			
48-52 450 E. P. naptha	5¾- 6	5½- 6	5¼- 5¾
56-58 450 E. P. gasoline	6 - 6¼	6 - 6¼	5¾- 6
56-58 New Navy gasoline	6½- 6¾	6¼- 6½	5⅞- 6⅛
58-60 New Navy gasoline	6⅝- 6⅞	6½- 6¾	6⅛- 6¼
60-62 400 E. P. gasoline	7½- 7¾	7½- 7¾	7¼- 7½
64-66 390 E. P. gasoline	8¼- 8¾	8¼- 8½	8¼- 8½
64-66 375 E P. gasoline	8¾- 9	8½- 8¾	8¾- 8¾
NORTH LOUISIANA			
56-58 450 E. P. gasoline	6½- 7	6¾- 7	6 - 6½
58-60 437 Navy Gasoline	6¾- 7¼	7 - 7¼	6½- 7
64-66 390-400 E. P. Gasoline	8½- 8¾	8½- 8¾	8¼- 8¾
ARKANSAS			
58-60 450 E. P. gasoline	6¾- 7	6¾- 7	6½- 6¾
58-60 Navy gasoline	7 - 7¼	7 - 7¼	6¾- 7
64-66 375 E. P. gasoline	8½- 9	8½- 8¾	8½- 8¾

NATURAL GASOLINE

OKLAHOMA	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
Grade A, 72-78 375 E.P., 90% Rec	5¼- 5¾	5½- 5¾	5¾- 6
Grade B, 76-82 375 E.P., 85% Rec	5 - 5¼	5¼- 5½	5½- 5¾
Grade C, 80-88 350 E.P., 78% Rec	4¾- 5	- 5	5 - 5½
Grade D, 88-92 350 E. P.	4¾- 5	- 5	5 - 5¼

(Motor Natural Gasoline—Blends)

OKLAHOMA	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
Grade 1, 58-62 437 E.P., 91% Rec	6 - 6¼	6 - 6¼	5¾- 6
Grrde 2, 58-62 450 E.P., 90% Rec	6 - 6¼	6 - 6¼	5¾- 6
Grade 3, 66-64 440 E.P., 88% Rec	6 - 6¼	6¼- 6½	5¾- 6¼
Grade 4, 66-70 435 E.P., 85% Rec	6 - 6¾	6¾- 6½	5¾- 6¼
NORTH TEXAS			
Grade A, 72-78 Absorption	5 - 5½	5¼- 5½	5¼- 6
Grade C, 80-88 Compression	4½- 5	- 5	5 - 5¼

(Motor Natural Gasoline—Blends)

Grade 1, 58-62 437 E. P.	6 - 6¼	6 - 6¼	5¾- 6
Grade 2, 58-62 450 E. P.	6 - 6¼	6 - 6¼	5¾- 6

BURNING OILS

PENNSYLVANIA			
45 Water White	7 - 7¼	7 - 7¼	7 - 7¼
46 Water White	-7¾	7¾- 8	7½- 7⅞
47 Water White	8 - 8½	8½- 8¾	8 - 8½
300 Burning Oil	7½- 8	7½- 8	7¾- 8
OKLAHOMA			
41-43 Water White	4½- 4⅝	4½- 4⅝	4½- 4⅝
42-44 Water White	4⅝- 4¾	4⅝- 4¾	4⅝- 4¾
NORTH TEXAS			
40-42 Prime White Distillate	4½- 4¾	4¼- 4½	4 - 4¼
41-43 Water White Kerosene	4¾- 5	4½- 4¾	4½- 4⅝
NORTH LOUISIANA			
41-43 Water White Kerosene	5 - 5¼	5 - 5½	4½- 4¾
ARKANSAS			
41-43 Water White Kerosene	4½- 4¾	4½- 4¾	4½- 4¾
42-44 Water White Kerosene	4¾- 5	4¾- 5	4¾- 5

Above prices are f. o. b. refinery in tank car. They are the average at which the bulk of the products on the open market move. Whoever has knowledge of any prices on any considerable quantity different than above will favor us with this information.

Chicago Marketers Confident Of Improved Conditions

CHICAGO, Dec. 7.—Faith in the current strength of the market in conjunction with belief that a crude advance is not so far off as has been thought, put a bullish tone on the Chicago oil trade during the last two or three days. The spirit of looking upward was reflected in the price of gasoline by an advance in tank car quotations of about ¼ cent. Brokers and refiners who accepted 6¾ cents last week as a good "first asking price", sold considerable goods at that figure on Friday and Saturday.

Occasionally a few cars could be found at 6½ cents, it was admitted, but as many were sold at 7 cents, according to authentic information. The higher gravities of gasoline particularly, were in demand. That condition is attributable to weather conditions wholly, the temperature all over Standard Oil Co. of Indiana territory being cool enough to make the motorist appreciate the quick start of light fuels, but not cold enough to make motoring unpleasant. The resulting consumption of high test gasoline has been good.

The volume of gasoline moved during the week, has been satisfactory and far better than at this season most years. Several jobbers in this general vicinity have reported that their turnover of gasoline in November was equal to that of September, and weather charts show that November was a milder month than October.

Refined oil also took a turn upward. Export demand has rendered it a little scarce and apparently domestic requirements have become a little more insistant. The price is 4½ to 4¾ cents and several refinery offices had 4¾ cents as their lowest and only price. There is a possibility that as much of the goods moved at 4½ as at the high limit of the range but the tendency was distinctly upward.

Distillate is weaker. It is a direct result of the mild weather too. Domestic supplies are holding up well under such conditions and naturally the jobbers are buying sparingly. Whereas a few cars of the stuff moved at prices as high as 3½ cents several weeks ago, 3¼ now is considered the market.

Gas oil demand is a little better. Just where the demand originates is hard to tell. Apparently there has been no weather to bring gas companies into the market and no especially large orders from any particular region. Nevertheless the product is found a litle scarcer than last week and currently the price is quoted generally above 2¼ but 2½ cents is too high. As far as price is concerned it is only a shade above last wek if any at all, but the demand is firmer.

Fuel oil is firmer. Over the whole week there appeared to be a gradual strengthening in the market for 24-26 Oklahoma, but on Friday and Saturday there was an advance in price named in the offices of several important marketers. Last Monday the 70-cent price could be shaded but that condition did not last long. A price of 75 cents was quoted rather generally late in the week. Even Smackover and East Field crude fuels shared in the improvement.

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REFINERS and WHOLESALERS
PETROLEUM PRODUCTS
Oil City, Pa.-Chicago-New York-Boston-Philadelphia-Tulsa-London, Eng.

Refinery Markets On Lubricants, Heavy Oils

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

NEUTRAL OILS

PENNSYLVANIA	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
(Viscous Test 70)			
200 Vis. No. 3 Assoc. Filt.	25½-26	25½-26	-26
180 Vis. No. 3 Assoc. Filt.	23½-24	23½-24	-24
150 Vis. No. 3 Assoc. Filt.	21 -21¼	20½-21	-21
(Non-Viscous)			
34 350-360 Flash	7½- 8	7½- 7¾	7½- 7¾
36 Miners Neutrals 300-305 Flash	- 7	- 7	7 - 7¼
OKLAHOMA			
(Viscous Test 100)			
70 Vis. at 100°F. No. 2 color	3¾- 4¼	3¾- 4¼	3¾- 4¼
70 Vis. at 100°F. No. 2½-3 color	3½- 4	3½- 4	3½- 4
100 Vis. at 100°F. No. 2 color	4¾- 5¼	4¾- 5¼	4¾- 5¼
100 Vis. at 100°F. No. 2½-3 color	4½- 5	4½- 5	4½- 5
150 Vis. at 100°F. No. 3 color	9½-10	9½-10	9½-10
150 Vis. at 100°F. No. 4 color	9 - 9¼	9 - 9¼	9 - 9½
180 Vis. at 100°F. No. 3 color	12 -12½	12 -12½	12 -12½
180 Vis. at 100°F. No. 4 color	11¼-11¾	11¼-11¾	11¼-11¾
180 Vis. at 100°F. No. 5 color	10½-11	10½-11	10½-11
180 Vis. at 100°F. No. 6 color	9¾-10¼	9¾-10¼	9¾-10¼
200 Vis. at 100°F. No. 3 color	13 -13½	13 -13½	13 -13½
200 Vis. at 100°F. No. 4 color	12¼-12¾	12¼-12¾	12¼-12¾
200 Vis. at 100°F. No. 5 color	11½-12	11½-12	11½-12
200 Vis. at 100°F. No. 6 color	10¾-11¼	10¾-11¼	10¾-11¼
220 Vis. at 100°F. No. 3 color	14 -14½	14 -14½	14 -14½
220 Vis. at 100°F. No. 4 color	13¼-13¾	13¼-13¾	13¼-13¾
220 Vis. at 100°F. No. 5 color	12½-13	12½-13	12½-13
220 Vis. at 100°F. No. 6 color	11¾-12¼	11¾-12¼	11¾-12¼
240 Vis. at 100°F. No. 3 color	15 -15¼	15 -15¼	15 -15¼
240 Vis. at 100°F. No. 4 color	14¼-14¾	14¼-14¾	14¼-14¾
240 Vis. at 100°F. No. 5 color	13½-14	13½-14	13½-14
240 Vis. at 100°F. No. 6 color	12¾-13¼	12¾-13¼	12 -13¼
280 Vis. at 100°F. No. 3 color	17½-18	17½-18	17½-18
280 Vis. at 100°F. No. 4 color	16½-17	16½-17	16½-17
280 Vis. at 100°F. No. 5 color	15½-16	15½-16	15½-16
280 Vis. at 100°F. No. 6 color	14½-15	14½-15	14½-15
300 Vis. at 100°F. No. 6 color	14¾-15¼	14¾-15¼	14¾-15¼
SOUTH TEXAS **(Viscous Test 100; cold test 0)**			
100 Vis. No.2 Color Unfilt. Pale	7 - 8	7 - 8	7 - 8
150 Vis. No.2½ Color Unfilt. Pale	9½-10½	9½-10½	9½-10½
200 Vis. No.3 Color Unfilt. Pale	11 -12	11 -12	11 -12
300 Vis. No.3 Color Unfilt. Pale	13½-14½	13½-14½	13 -14
500 Vis. No.3½ Color Unfilt. Pale	15 -16	15 -16	15 -16
750 Vis. No.4 Color Unfilt. Pale	21 -22	21 -22	21 -22
200 Vis. No 2 Filt. Pale	-23	-23	-23
300 Vis. No.2 Color Filt Pale	-26	-26	-26
500 Vis. No.2½ Color Filt. Pale	-29	-29	-29
750 Vis. No.2½ Color Filt. Pale	-39	-39	-39
200 Vis. No.5½ Color Red Oil	9½-10½	9½-10½	9½-10½
300 Vis. No.5½ Color Red Oil	11½-12½	11½-12½	11½-12½
500 Vis. No.6 Color Red Oil	13½-14½	13½-14½	13½-14½
750 Vis. No.6 Color Red Oil	19½-20½	19½-20½	19½-20½

CYLINDER OILS

PENNSYLVANIA	Prices Dec. 10	Prices Dec. 3	Prices Nov. 26
600 Steam Refined	11½-12	11½-12	11½-12
635 Steam Refined	-14	-14	13½-14
650 Steam Refined	15 -15½	15 -15¼	-15
600 Flash	-18	-18	-17
600 Warren E	-16½	-16½	-16½
600 Oil City E	-15½	15 -15¼	-15½
600 Filtered D	21 -21½	20½-21	-21
Cold Test Stocks (bright filtered)	31½-33	32 -34	32 -34
Cold Test Stock (dark filtered)	29 -30	30 -31	30 -31
Black Oil	6 - 7	- 6	- 6
OKLAHOMA			
Bright Filtered Stock	26 -31	26 -31	26 -31
Medium Filtered Stock	-16	-16	-16
600 Steam Refined Olive Green	4¾- 5	4¾- 5	4¾- 5¼
600 Steam Refined Dark Green	3¾- 4¼	3¾- 4¼	3¾- 4¼
Black Oil	3 - 3¼	3 - 3¼	3 - 3½

WAX

PENNSYLVANIA **(Per Pound New York)**			
122-124 White Crude Scale	3¼- 3½	- 3¼	- 3¼
124-126 White Crude Scale	- 3½	3¼- 3½	3¼- 3½
OKLAHOMA **(Per Pound Group 3)**			
124-126 White Crude Scale	2⅞- 3	2⅞- 3	2¾- 2⅞

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil	4⅞- 5⅛	5⅛- 5⅜	5⅛- 5¾
30-34 Fuel Oil	4⅝- 4¾	4¾- 5	4¾- 5
OKLAHOMA			
40-42 Prime White Dist.	4 - 4¼	4 - 4¼	4 - 4¼
38-40 Straw Distillate	3 - 3¼	3 - 3¼	3 - 3¼
36-38 Straw Distillate	2¾- 3	2¾- 3	2⅞- 3
32-36 Gas Oil (Gal.)	2¾- 2½	2¼- 2½	2¼- 2½
24-26 Fuel Oil (bbl.)	.75-.80	.70- .75	.67½-.72½
Fuel Oil, buyers, cars (bbl.)	.70-.75	.65- .70	.62½-.67½
NORTH TEXAS			
38-40 Straw Distillate	3¼- 3⅜	3 - 3¼	3 - 3⅛
32-36 Gas Oil (gal.)	2¼- 2½	2¼- 2½	2¼- 2½
24-26 Fuel, per bbl	.70-.75	.65-.70	.65-.70
South Texas Fuel	1.05-1.15	1.05-1.15	1.05-1.15
South Texas Gas Oil	2½- 2¾	2½- 2¾	2½- 2¾
NORTH LOUISIANA			
32-36 Gas Oil (Gal.)	2½- 2¾	2½- 2¾	3 - 3¼
22-26 Fuel Oil (bbl.)	.60-.70	.60-.70	.60-.70
ARKANSAS			
38-40 Distillate	3 - 3¼	3 - 3¼	3 - 3¼
32-36 Gas Oil	2½- 2¾	2½- 2¾	2½- 2¾
22-26 Refinery Fuel Oil	.60- .70	.60- .70	.60- .70
Smackover Crude Fuel	.55- .60	- .55	.....
East Field Crude Fuel	- .00	- .60	.....

Above prices are f. o. b. refinery in tank car. They are the average at which the bulk of the products on the open market move. Whoever has knowledge of any prices on any considerable quantity different than above will favor us with this information.

Moderate Weather Keeps Up Penn Gasoline Movement

Light Oil Table Pp. 9.

Staff Special

CLEVELAND, Dec. 10.—Moderate weather has maintained the volume of gasoline shipments from western Pennsylvania refineries but new business on the spot market is slow. Gasoline prices today are about on the same level as a week ago so far as the heavier grades of motor fuel are concerned, but are firmer than they were in the latter half of last week, when some 58-60 was available at as low as 9½ cents. This gasoline seemed to have disappeared by today.

Blends are a little weaker and those with high end points are soft. While manufacturers are inclined to quote around 10 cents, some have been moving at figures fractionally under that price.

Kerosene is rather spotty. Several refiners are maintaining their quotations at the level of last week but others have made some small concessions. Fuel oil is soft and cheaper than a week ago.

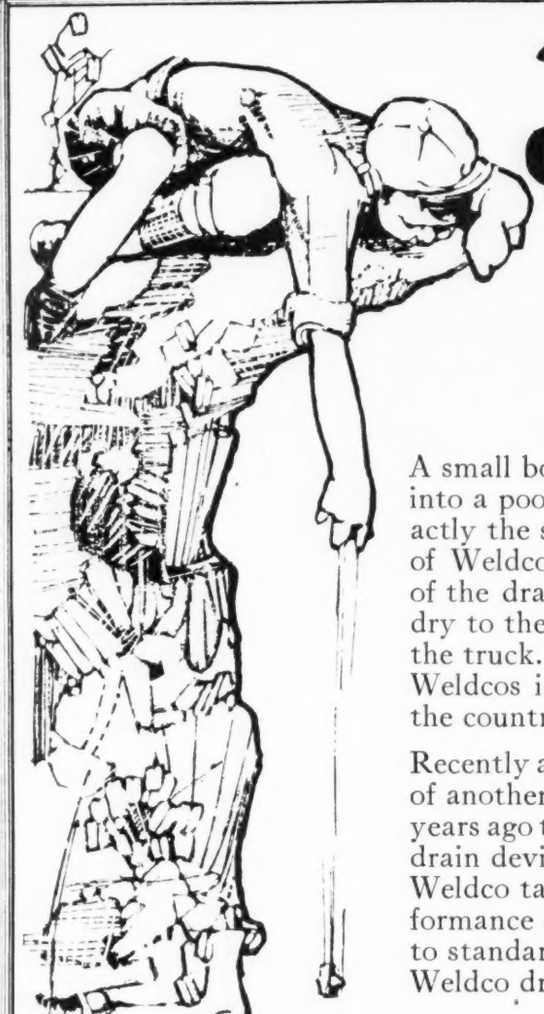
Recent orders for lubricating oils are still being worked on by many refiners and are preventing any accumulation of stocks. New business is slow and the opinion was expressed in several quarters that much activity cannot be expected until after the holidays now only two weeks off. Prices are holding up firmly.

Kentucky

Kentucky refiners report good movement of motor gasoline and several plants are sold up on high test. Gasoline prices have not changed in central Kentucky over the week. Some strengthening was noticeable at plants at Ohio river points. Most of the high test is moving into territory north of the Ohio river as benzol blends have obtained quite a vogue in river cities.

Fuel oil is stronger and central Kentucky plants have advanced their quotations to 3½ cents. Gas oil has been spotty and while kerosene shipments have been steady some slackening in demand was reported in some quarters. Central Kentucky price for water white remains at 6¼ cents.

PITTSBURGH, Dec. 8.—Capitalized at $10,000, the Fleetwing Gasoline & Oil Co., Wheelng, W. Va., filed its charter Nov. 27 in the Ohio county court. The incorporators are R. R. Spears, Harry F. Spears, Maude E. Murrin, I. R. Spears and R. Edwin Spears.



The GRAVITY TEST

DRAINS LIKE A FUNNEL

WELDCO TRUCK TANKS

TRADE MARK REG. U.S. PAT. OFF.

A small boy dropping a stone from the top of a bank into a pool below illustrates the law of gravity. Exactly the same rule is true of the drainage principle of Weldco Truck Tanks. Due to the funnel shape of the drain in each compartment the tank drains dry to the last drop no matter what the position of the truck. This is the gravity test that has placed Weldcos in scores of the largest oil truck fleets in the country.

Recently a large midwestern jobber sent us ten tanks of another make which they had purchased several years ago to be rebuilt to include the Weldco exclusive drain device. This company now operates six new Weldco tank equipped trucks. It was from the performance of their Weldco equipment which led them to standardize throughout their entire fleet on the Weldco drain.

We have several pieces of interesting literature which we will mail free to executives on request.

The Youngstown Welding Co.

530 West Rayen Ave. Youngstown, O.

(Welders Since 1912)

Tank Wagon, Service Station Markets
Gasoline and Kerosene

BELOW are given in cents a gallon, the tank wagon price of gasoline without the special taxes levied against motor fuels by many states, the amount of the state taxes, the total tank wagon price, with tax added in and the service station or retail price of gasoline as quoted in the various Standard Oil marketing territories. The right hand column is the tank wagon price of kerosene. By tank wagon price is meant the price to resale agents or dealers. Usually this price does not apply to sales to consumers from tank wagons.

Prices in effect Dec. 10

S. O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Atlantic City, N. J.	15.5	0	15.5	*	14
Newark, N. J.	15.5	0	15.5	*	14
Annapolis, Md.	15	1	16	*	14
Baltimore, Md.	15	1	16	19	13
Cumberland, Md.	15	1	16	19	15
Washington, D. C.	15	0	15	18	13.5
Danville, Va.	15	3	18	*	15
Norfolk, Va.	15	3	18	19	13
Richmond, Va.	15	3	18	21	13.5
Roanoke, Va.	15	3	18	21	15
Petersburg, Va.	15	3	18	*	14.5
Charleston, W. Va.	15	2	17	20	13.5
Clarksburg, W. Va.	15	2	17	*	14.5
Keyser, W. Va.	15	2	17	*	15
Parkersburg, W. Va.	15	2	17	*	12
Wheeling, W. Va.	15	2	17	20	13.5
Williamson, W. Va.	15	2	17	*	15
Charlotte, N. C.	15	3	18	21	14.5
Hickory, N. C.	15	3	18	*	15
High Point, N. C.	15	3	18	*	14.5
Mt. Airy, N. C.	15	3	18	*	14.5
Salisbury, N. C.	15	3	18	*	15
Charleston, S. C.	15	3	18	21	12.5
Columbia, S. C.	15	3	18	20	14.5

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK TERRITORY

*New York City	15.5	0	15.5	18	15
Albany, N. Y.	15.5	0	15.5	18	14
Buffalo, N. Y.	14	0	14	17	15
Rochester, N. Y.	15	0	15	19	13
Syracuse, N. Y.	15	0	15	17	12
Boston, Mass.	14.5	0	14.5	17	13

*In steel barrels.

ATLANTIC REFINING TERRITORY

Pittsburgh, Pa.	14	0	14	19*	14
Philadelphia, Pa.	14	0	14	19*	14
Allentown, Pa.	14	0	14	19*	14
Scranton, Pa.	14	0	14	19*	14
Altoona, Pa.	14	0	14	19*	14
Dover, Del.	14	1	15	18	14
Wilmington, Del.	14	1	15	18	14
Providence, R. I.	15	0	15.5	18	15
Springfield, Mass.	14.5	0	14.5	17	15
Worcester, Mass.	14.5	0	14.5	17	15
Hartford, Conn.	15.5	1	16.5	19	15
New Haven, Conn.	15.5	1	16.5	19	15
Boston, Mass.	14.5	0	14.5	17	15

Last six cities are Atlantic's chief marketing points in New England. S. O. New York markets there also.

*Contains 2-cent tax collected by dealer and paid by him directly to state.

S. O. OHIO TERRITORY

All Ohio points	16	0	16	18	13

S. O. KENTUCKY TERRITORY

Lexington, Ky.	14	1	15	17	14
Louisville, Ky.	13	1	14	16	*13
Covington, Ky.	15	1	16	18	13
Clarksdale, Miss.	13	1	14	16	14
Jackson, Miss.	13	1	14	16	12
Natchez, Miss.	12.5	1	13.5	15.5	13.5
Vicksburg, Miss.	12.5	1	13.5	15.5	13.5
Birmingham, Ala.	14	2	16	18	15.5
Mobile, Ala.	13	2	15	17	13.5
Montgomery, Ala.	14	2	16	18	16
Atlanta, Ga.	11	3	14	18	14
Augusta, Ga.	15	3	18	20	15
Macon, Ga.	15	3	18	20	15.5
Savannah, Ga.	13	3	16	18	14
Jacksonville, Fla.	13	3	16	18	14
Miami, Fla.	15	3	18	20	15.5
Tampa, Fla.	13	3	16	18	14
Pensacola, Fla.	13	3	16	18	14.5

S. O. CALIFORNIA TERRITORY

Phoenix, Ariz.	16	3	19	22	21.5
Los Angeles, Cal.	10	2	12	15	15.5
Fresno, Cal.	11.5	2	13.5	16.5	17.5
San Francisco, Cal.	11	2	13	16	15.5
Reno, Nev.	14.5	2	16.5	19.5	19
Portland, Ore.	12		15	18	16.5
Seattle, Wash.	12	1	13	16	16.5
Spokane, Wash.	16	1	17	20	20.5
Tacoma, Wash.	12	1	13	16	16.5

S. O. LOUISIANA TERRITORY

	Gasoline T.W.	Tax	Total	S.S	Oil T.W.
Camden, Ark.	13.5	3	16.5	18.5	13
Little Rock, Ark.	13.5	3	16.5	18.5	13
West Helena, Ark.	13.5	3	16.5	18.5	13
Alexandria, La.	12.5	1	13.5	15.5	13
Baton Rouge, La.	11	1	12	14	11.5
Lake Charles, La.	12.5	1	13.5	15.5	13
New Orleans, La.	11.5	1	12.5	14.5	12
Shreveport, La.	12.5	1	13.5	15.5	13
Bristol, Tenn.	15	2	17	19	15.5
Chattanooga, Tenn.	13.5	2	15.5	17.5	14.5
Knoxville, Tenn.	14.5	2	16.5	18.5	15
Nashville, Tenn.	11.5	2	13.5	15.5	14.5
Memphis, Tenn.	13	2	15	17	14

MAGNOLIA PETROLEUM TERRITORY

Muskogee, Okla.	8	1	9	12	10
Oklahoma City*	12	1	13	16	10
Tulsa, Okla.	8	1	9	12	10
Fort Smith, Ark.	10	3	13	16	12
Little Rock, Ark.	12	3	15	18	13
Texarkana, Ark.	12	3	15	18	12
Dallas, Tex.	11	1	12	15	8
El Paso, Tex.	13	1	14	17	12
Fort Worth, Tex.	11	1	12	15	10
Houston, Tex.	13	1	14	18	11
San Antonio, Tex.	11	1	12	15	9

*These prices are for Oklahoma City territory. Price within city is one cent less.

S. O. INDIANA TERRITORY

Chicago, Ill.	12	0	12	14	10
Decatur, Ill.	12.2	0	12.2	14.2	10.5
East St. Louis, Ill.	11.1	0	11.1	13.35	9.6
Joliet, Ill.	12.4	0	12.4	14.4	10.7
Peoria, Ill.	12.2	0	12.2	14.2	10.5
Quincy, Ill.	12.2	0	12.2	14.2	10.3
Evansville, Ind.	12	2	14	16	10.5
Indianapolis, Ind.	12.2	2	14.2	16.2	10.7
South Bend, Ind.	10.4	2	12.4	14.4	10.9
Detroit, Mich.	10.8	0	10.8	12.8	11.2
Grand Rapids, Mich.	12.7	0	12.7	14.7	11.1
Saginaw, Mich.	12.9	0	12.9	14.9	11.3
La Crosse, Wis.	13.2	0	13.2	15.2	11.4
Madison, Wis.	12.3	0	12.3	14.3	10.5
Milwaukee, Wis.	12	0	12	14	10.2
Duluth, Minn.	13.2	0	13.2	15.2	11.6
Mankato, Minn.	12.8	0	12.8	14.8	11.4
Minneapolis, Minn.	12.9	0	12.9	14.9	11.6
Davenport, Ia.	11.5	0	11.5	13.5	10.9
Des Moines, Ia.	12.5	0	12.5	14.5	10.9
Sioux City, Ia.	12.0	0	12	14	10.5
Kansas City, Mo.*	10.9	1	11.9	13.9	9.3
St. Joseph, Mo.**	11.8	.5	12.3	14.3	10.2
St. Louis, Mo.	11.6	0	11.6	13.9	10
Fargo, N. D.	13.6	1	14.6	16.6	13.6
Grand Forks, N. D.	15.2	1	16.2	18.2	13.9
Minot, N. D.	14.9	1	15.9	17.9	13.6
Huron, S. D.	14	2	16	18	12.1
Pierre, S. D.	14	2	16	18	12.1
Wichita, Kan.	11.8	0	11.8	13.8	9.8
Bartlesville, Okla.	10.9	1	11.9	13.9	8

*Kansas City tax of 1 cent imposed by city.
**St. Joseph tax of ½ cent imposed by city.

S. O. NEBRASKA TERRITORY

Crawford, Neb.	13	0	13	*	11.25
Omaha, Neb.	12.25	0	12.25	14.25	10.5
McCook	13.75	0	13.75	15.75	12
Norfolk	12.75	0	12.75	14.75	11
North Platte	13.75	0	13.75	15.75	11.75
Scotts Bluff	13.25	0	13.25	15.25	11.25

*Standard has no service station here.

CONTINENTAL OIL TERRITORY

Denver, Colo.	11	2	13	15	12.5
Glenwood Sp'gs. Colo.	17	2	19	*	16.5
Pueblo, Colo.	13	2	15	17	12.5
Basin, Wyo.	15	1	16	*	13
Casper, Wyo.	13	1	14	13	11
Cheyenne, Wyo.	14.5	1	15.5	17.5	13
Cody, Wyo.	16	1	17	*	14
Lander, Wyo.	15	1	16	*	13
Sheridan, Wyo.	17	1	18	20	15
Billings, Mont.	16.5	2	18.5	20.5	14.5
Butte, Mont.	18	2	20	22	15
Great Falls, Mont.	18	2	20	22	16
Helena, Mont.	18	2	20	22	16
Miles City, Mont.	17.5	2	19.5	21.5	15.5
Ogden, Utah	15.5	2.5	18	20	15.5
Salt Lake City, Utah	15.5	2.5	18	20	15.5
Boise, Ida.	18	2	20	22	18
Albuquerque, N. M.	17	1	18	20	15.5

*Continental has no service stations at these points.

Week's Price Changes Tank Wagon Market

CHICAGO, Dec. 7.—Standard Oil Co. of Indiana, effective Dec. 3, reduced the gasoline tank wagon price 1 cent at Davenport, Ia., Rock Island and Moline, Ill., meeting competition.

* * *

LOUISVILLE, KY., Dec. 8.—Standard Oil Co. of Kentucky reduced tank wagon price of gasoline 2 cents at Atlanta, Ga., Nov. 21. Service station price was not changed.

* * *

BALTIMORE, Dec. 8.—As of Dec. 1, Standard Oil Co. of New Jersey has announced reductions of 2 cents in gasoline service station price at Norfolk, Va., and 1 cent at Columbia, S. C.

* * *

DENVER, Dec. 8.—Continental Oil Co. today reduced gasoline prices 1 cent at Pueblo and Glenwood Springs.

* * *

CHICAGO, Dec. 10.—Standard Oil Co. of Indiana reduced gasoline tank wagon 1-cent at Vincennes, Ind., Dec. 7.

* * *

PHILADELPHIA, Dec. 10.—Atlantic Refining Co. today reduced gasoline prices 1 cent in Pennsylvania and Delaware.

* * *

CLEVELAND, Dec. 10.—Prices of gasoline for Nashville, Tenn., have been incorrect in the last few issues of **National Petroleum News.** This was due to fact price at Nashville was not changed when Standard Oil Co. of Louisiana advanced tank wagon price only on Nov. 12, price at Nashville was not changed. Tank wagon at Nashville was then reduced 1 cent to 15½ cents, including the state tax of 2 cents, on Nov. 23. Service station price was reduced 1 cent to 15½ cents Dec. 1.

* * *

TULSA, Dec. 10.—Magnolia Petroleum Co. on Dec. 4 advanced gasoline prices in cities where price wars have raged, bringing the tank wagon and service station prices at Dallas, Fort Worth and San Antonio to 12 and 15 cents, respectively, gasoline was advanced 2 cents at El Paso.

South Texas Markets Firm

HOUSTON, Dec. 10.—South Texas refiners report continued satisfactory spot movement of lubricants. Current output is well sold up. Prices of some oils have strengthened but there has been no general advance. The whole list is firm.

CANASTOTA, N. Y., Dec. 7.—Mr. and Mrs. G. K. Clark, who were married on Nov. 7, are spending their honeymoon in Florida, where they will remain until April 1. They are traveling by automobile. Mr. Clark is owner of the Clark Motor & Oil Sales Co. of this city and Mrs. Clark was formerly Miss Ellen Tackabury.

More Gasoline Worked Into Export Channels With Kerosene

By Special Correspondent

NEW YORK, Dec. 10.

CONSIDERABLE gasoline was worked off into export channels last week, in conjunction with kerosene. Practically all of the bulk sales were made to buyers with French connections. It was persistently reported that one of the large Independents sold a cargo of 49,000 barrels of new Navy and 64-66 gravity gasoline at 7¼ and 10¼ cents, respectively, for nearby shipment out of the Gulf to France. These are the lowest prices reported so far for the present movement.

Two mixed cargoes were reported sold for nearby shipment out of Philadelphia, one calling for 56,000 and the other 64,000 barrels of Navy and 64 gasoline along with prime and water white kerosene. Prices were not divulged. Buying was credited to a large Paris oil concern. Demand for gasoline alone has not been particularly good. The inquiry from London and English houses in general is somewhat better than expected but these factors are entertaining ideas considerably below those of American refiners, and no business to speak of was consummated. Locally, new Navy is offered at 9¼ cents in cargoes with indications that a lower bid would be accepted.

Cased gasoline is in slightly better demand, and some of the big Japanese houses are reported to be in the market for fair sized quantities. A little cased gasoline is moving to South America and the west coast of Africa but no transactions of consequence were reported. Some factors still report considerable difficulty in arranging for freight space out of the Gulf to the Orient.

Kerosene is Stiffening

Kerosene has been stiffening right along, and holders in these parts show little inclination to press sales particularly in view of the reports of strength in the Group 3 markets. There is a decidedly more optimistic feeling perceptible and many of the refiners feel that they ought to be getting more for their kerosene from the export buyers. In fact, there is little oil being offered for export owing to the high prices bid by domestic consumers. At the Gulf prime white is offered at 6 to 6¼ cents a gallon but it is expected that all of the 6-cent oil will have been cleaned up by the end of the present week.

French buyers have been showing a keen interest in the kerosene market and in view of the advancing tendency in prices, are expected to enter the market soon. Stocks on hand are by no means large, and some of the refiners are passing up export business. There is a fairly steady movement to the Orient but this is chiefly against old contracts.

Considerable interest has developed in 26-28 gas oil of late and there is very little available just now. One of the leading Independents is out of the market, being sold up to March 1. At the Gulf, spot oil is quoted at 3 cents a gallon compared with 2½ cents which recently prevailed there. Scandinavian and German, as well as English buyers, are showing a keen academic interest in the gas oil market and the prospects of higher prices are bright. A rumor was current that a cargo of 35,000 barrels sold at 3 cents Gulf, for nearby shipment to France but confirmation was lacking. Locally 36-40 is flat and easy, at 4 cents a gallon f. o. b. New York refinery. Stocks are fairly large and refiners seem more inclined to press sales.

Bunker Oil Quiet

The demand for spot bunker oil has been unusually slow of late. Most of the big refiners have considerable business on their books which they say will keep them busy for some time to come. The others are more or less uninterested in the market, having little or nothing on hand. There have been rumors current of an impending advance, due to the strength in Mexican crude and the sharp drop in domestic productions. However, at the close of the week, the market was none too firm at $1.35 per barrel f. o. b. terminal.

Export demand for lubricants was rather sluggish last week. One report had it that a German house had purchased 25,000 barrels of assorted lubricants for nearby shipment out of the Gulf but confirmation was lacking. Locally demand was centered on Pennsylvania 600 steam refined and the price is well maintained at 20 to 21 cents a gallon in barrels New York. Spindle oils have been more or less neglected the past few days while the paraffin oils were flat. Buyers of bright stock are inquiring more actively but are slow in placing orders.

Waxes were appreciably firmer at the close of the week, and most of the refined descriptions were advanced ⅛ cent owing to the marked improvement in the export demand. Stocks are in firm hands, and the trade looks for further gains this week. Match waxes are holding up fairly well, but the European request is not so active as expected. However, there is a little more stirring in white crude scale waxes.

Petrolatums were not particularly active. Snow white is unchanged and rather quiet at 11½ to 12½ cents a pound, although English facial cream manufacturers were again inquiring around. Lily white was flat at 9¼ cents. Dark green and veterinary were dull and features.

Medicinal oils were dull and more or less neglected. Buying of Russian oil has been more spasmodic the past few days and no really good sized transactions came to light during the entire week. Domestic oils were quiet and unchanged.

British Importations

During the week ended Nov. 19 there were imported into the United Kingdom 13,901,847 gallons of petroleum. Larger receipts at London included 116,960 gallons of lubricating oil to the Anglo-American Oil Co., from New York; 2,489,700 gallons of crude oil to the British Petroleum Co. from Abadan; 585,000 gallons of fuel oil to the British Mexican Petroleum Co. from Tampico; 1,022,830 gallons of gasoline to the Shell Marketing Co. from New Orleans while this company also received 193,170 gallons of fuel oil from Singapore and another lot of 251,940 gallons of fuel oil from the same port. The Anglo-

New York Market

The following prices are quoted by eastern seaboard independent refineries on products which are manufactured from Mexican crude transported from Tampico to the refinery by tanker and from California crude.

	Dec. 10
*Gasoline (New Navy) gal., Tank Cars	09½
‡Bunker oil (F.O.B. New York) bbl.	1.35
Gas Oil (36-40 refinery) gal.	.04–.04¼
†Kerosene, 45-150 W.W.Bulk Del.,N.Y.nom.	.08½

*Delivered.
†Nominal.
‡Plus .06½ charge lighterage.

Export Markets

Furnished to N. Y. Produce Exchange by big exporting oil companies. No actual sales. Record for statistical purposes only.

Illuminating Oils

	Dec. 10	Dec. 3
Bulk, gal., Bayonne	7.00	7.00
Barrels, gal., Bayonne, cargo	14.00	14.00
Cases, gal., Bayonne	17.15	17.15

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Gasoline-Naptha

(Cents per Gallon)

U. S. Navy, dead bulk	10.50	10.50
U. S. Navy, cases	24.40	24.40
Export grade, bulk	12.00	12.00
63-66 deg. bulk	14.00	14.00
63-68 deg. bulk	15.50	15.50

Tide Water Oil Company

(f. o. b. Bayonne)

59-60 deg. bulk	11.50	11.50
59-61 deg. cases	24.40	24.40
Export grade, Navy Specifications bulk	10.50	10.50
63-65 deg. bulk	14.00	14.00
68-72 deg. bulk	16.50	16.50

	Bulk	Barrels	Cases
Standard white 110	7.00	14.00	17.15
Water white 150	8.00	15.00	18.15

The Texas Company

Gasoline, cases	24.40	24.40

Kerosene	Bulk	Barrels	Cases
Standard White	7.00	14.00	17.15
Prime White	7.50	14.50	17.65
Water White	8.00	15.00	18.15

American Oil Co. received 1,061,480 gallons of kerosene from Batoum.

At Liverpool the arrivals were confined to small quantities, the largest one reported including 41,080 gallons of lubricating oil to the Anglo-American Oil Co. from New York. The only large arrival at Cardiff included 568,000 gallons of kerosene to the Anglo-Mexican Petroleum Co. from Tampico. At Manchester the Anglo-American Oil Co. received 140,380 gallons of lubricating oil from New York and 817,700 gallons of fuel oil from Baytown. The Anglo-Mexican Petroleum Co. received 1,546,740 gallons of fuel oil from Tampico. At Newcastle the Shell Marketing Co. received 930,970 gallons of fuel oil from New Orleans while at South Shields the British Mexican Petroleum Co. received 1,440,000 gallons of fuel oil from Tampico. At Grangemouth, Scottish Oils, Ltd. received 2,120,230 gallons of crude oil from Abadan.

Supply Markets Steady; Linseed Higher

By Special Correspondent

NEW YORK, Dec. 10.—Linseed oil futures were advanced from 1 to 2 cents a gallon last week, owing to the continued strength in flaxseed and the growing demand for 1924 oil. Stocks on spot are very light, and many persons in the trade expect an upturn in prices during the next week or so. Spot to February raw oil in carlots, cooperage basis, is held at 92 cents a gallon while March-April is quoted at 90 cents and May-August at 84 cents a gallon. Many of the large paint and varnish makers appear anxious to cover their spring requirements while linoleum makers are purchasing through to June. Practically no foreign oil has appeared on the market so far this month.

Soya bean oil was very well maintained at 10¾ cents a gallon in tank cars on spot, but there was little or nothing to be had and offerings from the Orient were very light.

Most of the animal oils were steady to firm. Buying has been routine and rather hand-to-mouth for some time and consequently quotations have been more or less steady. Neatsfoot oil is in slightly better request while lard and oleo oils have been marking time. Degras is enjoying a better inquiry but actual demand is slack and no business to speak of was uncovered. Stearine has been quiet and fairly steady. Stearic acid has not changed to any extent while the red oils were a trifle easier. Buyers of tallow oil have been purchasing very sparingly. There has been a slightly better call for horse oil.

Fish oils were steady but quiet. Holders of crude menhaden oil realize there is not a great deal of this oil to be carried over this season and are very firm at 50 cents a gallon in tank cars f. o. b. Baltimore factory. Buyers are more inclined to purchase although no transactions worth mentioning were heard of last week. Light pressed menhaden oil in barrels, was quoted at 65 cents a gallon. Bleached menhaden oils were fairly steady at unchanged prices

Soda ash was quiet but steady. Prices were unchanged. Business was largely against old contracts, and the outlook is very good in view of the large contracts signed for next year. Caustic soda was a trifle easier, for export, and offerings were somewhat large, but in the main the complexion of this market did not show much change from the previous week.

Buyers of sulfuric acid showed little or no interest and prices were somewhat easier although no actual shading was reported. Benzol was without material change. Prices have been fairly steady but the movement was rather light. Bleaching powder was weak and the outlook is bearish. There has been little or no buying and prices are quoted at $1.25 per hundred pounds at the works, and also on the spot in drums. There is talk of shading these prices.

Naval stores market was quiet throughout the week. Some of the larger export buyers have been inquiring a little more actively but actual foreign demand was very disappointing last week. Spirits of turpentine in barrels ex yard was held at 93 cents a gallon. Stocks on hand are by no means large. Rosins were quiet and easy but no reductions were uncovered. Rosin oil was quiet and unchanged but there was a little more doing in tar and pitch.

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f.o.b. shipping point as effective this date.

	Dec. 10	Dec. 3
***Benzol**		
Pure Water White, Tanks....gal.	—.23–28	–23
Drums...gal.	—.28–33	–28
90%.....Tanks....gal.	—.21–26	–21
Drums...gal	—.26–31	–26
Refiners' Supplies		
Soda Ash light 58%...cwt.	$1.38–1.50	$1.38–1.50
Silicate of Soda 60 deg....Bbls.....cwt.	–1.70	–1.70
Sal. Soda wks.....cwt.	1.10–1.30	1.10–1.30
Caustic Soda 76% solid.cwt.	3.10–3.25	3.10–3.25
Chloride of Lime.....cwt.	1.25–1.35	1.25–1.35
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....per ton	9.00–11.00	9.00–11.00
Jobbers' Supplies (Open Market)		
Vegetable Oils—		
*Linseed, carloads Spot.gal.	–.92	–.92
December.....	–.92	–.92
January.....	–.92	–.91
February–April.....	–.92	–.89
May–August.....	–.84	–.87
Less carload Spot.....gal.	–.95	–.95
5 Bbls. or less Spot.....gal.	–.98	–.98
Boiled, tank Spot.....gal.	–.88	–.88
Boiled, carloads Spot...gal.	–.94	–.94
Soya Bean Spot, Tanks.....lb.	–.10¾	–.10¾
Animal Oils—		
English Degras.....lb.	$–.04¾	$–.04¾
Domestic Degras, bbls. carloads.....lb.	–.03¾	–.03¾
*Horse.....lb.	–.07½	–.07½
Oleic Acid—		
Dist.....lb.	–.08½	–.08½
Saponified.....lb.	–.08½	–.08½
Lard Oils—		
Prime Winter Strained.. 1 to 1½ffa.40/45c.t.lb.	$.16¾	$.16¾
Extra Winter Strained.. 2 to 4½ffa.40/45c.t.lb.	.13¾	.13¾
Extra..... 4 to 5 ffa.40/45c.t.lb.	.12¾	.12¾
Extra No. 1..... 7 to 10 ffa.40/50c.t.lb.	.11	.11
No. 1.....15 to 18 ffa.40/45c.t.lb.	.10½	.10½
No. 2.....22 to 23 ffa.40/45c.t.lb.	.10	.10
Prime Edible Tallow under 1½ffa. 40/45c.t. N.Y.....lb.	–.09¾	.09¾
Tallow acidless.....lb.	–.11½	.11½
Lard Stearine.....lb.	–.15½	.15½
Oleo Stearine.....lb.	–.11	.10¾
Neatsfoot Oil—		
Pure.....bbls.-lb.	.14¼	.14¼
Extra.....do lb.	.11	.11
No. 1.....do lb.	.10½	.10½
Cold pressed.....lb.	.17	.17½
Fish Oils—		
Menhaden Oil Light pressed.....gal.	$–.65	–.65
White.....gal.	–.70	–.70
Yellow bleached.....gal.	–.68	–.68
*Herring, tank cars coast.gal.	–.40	–.40
Whale, extra winter bleached.....gal.	.81	.81
Seal.....gal.	Nominal	
Naval Stores—		
Turpentine, N. Y.....gal.	.93	.93
Turpentine†.....gal.	.86½	.86½
Rosin B. N. Y.....Bbl.	5.60	5.60
Rosin F. N. Y.....Bbl.	5.60	5.60
Rosin B.†.....Bbl.	4.22½	4.25
Rosin F†.....Bbl.	4.22½	4.25
Rosin Oil 1st run.....gal.	.43	.43
Rosin Oil 2nd run.....gal.	.46	.46
Pine Tar—		
Kiln Burnt.....Bbl.	11.00	11.00
Retort.....Bbl.	11.00	11.00

†Savannah, Ga., market.
‡Carlots.
*Nominal.

Mild Temperatures Help Gasoline Sales

CHICAGO, Dec. 9.—The outlook for the week between Dec. 10 and 15 is not at all promising. Cooler weather at the beginning of the week and again at the last is forecast by the weather bureaus, also rains in the southern part of the country and snows in the north. But in the meantime the sky is bright over a large part of the country, and motorists keep running their cars to their own delight and the profit of the oil men and tire dealers.

The first two days of last week had light and scattered showers. The second two days brought general rains to that part of the country east of the Mississippi river. The last two days were fair and warm, except in the extreme northeastern quarter of the country.

All of November was mild with light precipitation in Standard Oil Co. of Indiana territory. The lowest temperature was higher than that recorded the month before, and the highest for November since 1878. In Chicago the temperature was as low as freezing only four times in the month. It is not surprising that the monthly reports of some oil jobbers in the Ohio river valley show more gallonage than was sold in September.

Refinery Markets Firm In North Texas

WICHITA FALLS, Dec. 8.—Refinery markets in north Texas were quieter last week than the previous week. Gasoline prices have been firmly held at the recently advanced levels but new business written has been on a smaller scale. Most of the plants have been shipping on old orders and have not needed new orders to keep them busy.

Sales of high gravity material were largely for domestic consumption this week. One exporter was inquiring for a quantity of 64-66, 375 end point, material for shipment during January at 8½ cents. Refiners generally were not willing to accept that price for delivery so far in advance in their present optimistic frame of mind.

New Navy has been moving at 6¾ cents on new orders. A little has been available at 6½ cents while on the other hand some refiners have been holding out for 7 cents.

There appear to be rather large stocks of natural gasoline on hand in north Texas and in the Breckinridge district. Raw compression has been offered for sale by some manufacturers in distress for 4½ cents per gallon. The bulk of the movement is being held at slightly higher figures, however. In Breckinridge it is reported that some absorption gasoline has been sold at as low as 5 cents per gallon. Some manufacturers are storing rather than accept present prices.

Kerosene is strong and still scarce.. The Standard Oil Co. of New Jersey managed to pick up 60 cars for export during the week at a price in the vicinity of the spot domestic market. It is difficult to buy kerosene today at 4¾ cents per gallon and a number of refiners will sell nothing below 5 cents.

Distillates have moved up in sympathy with kerosene and are scarce. On 38-40 light straw movements are at 3⅛ to 3⅜ cents per gallon. One plant which has been a large factor in the distillate market has ceased offering any goods of that character pending the prospective operation of its cracking stills. Other refiners are not finding it profitable to make the cut in view of the highly satisfactory kerosene market.

Movement of fuel oil has been steadily increasing and stocks are now light throughout the field. The Fort Worth and Denver City Railway Co. purchased between 20,000 and 25,000 barrels of fuel in Wichita Falls this week. It paid 70 cents per barrel in buyers cars.

Spot crude is becoming scarcer and premiums are fairly common. Most of the stronger plants which have been operating continuously took advantage of the break in the market during the depression to contract crude at the posted market and will not be faced with the payment of premiums on a good part of their raw material for some time. When it is necessary to buy spots, however, from 10 to 25 cents is a common premium on Burkburnett crude posted now at $1 per barrel.

Crude Oil Prices All Fields

EASTERN FIELDS

	1923 Dec. 10	1922 High		1922 Low		1921 High		1921 Low	
Bradford-Allegany	$2.60	Jan. 1	$4.00	July 19	$3.00	Jan. 1	$6.10	June 29	$2.25
Other Pennsylvania	2.35	Jan. 1	4.00	July 19	3.00	Jan. 1	6.10	June 29	2.25
Cabell	1.20	Jan. 1	2.61	July 19	1.86	Jan. 1	4.46	June 29	1.11
Corning	1.25	Jan. 1	2.40	July 20	1.75	Jan. 1	4.00	June 29	1.20
Somerset	1.10	Jan. 1	2.40	July 19	1.65	Jan. 1	4.50	June 29	1.00
Somerset Light	1.25	Jan. 1	2.65	July 19	1.90	Jan. 1	4.25	June 29	.90
Ragland	.75	Jan. 1	1.25	July 19	1.00	Jan. 1	2.60	June 29	.60

Somerset oil run on and after Oct. 1, 1922, takes price of 6 cents higher than above quotation.

CENTRAL STATES FIELDS

Wooster	$1.25	Jan. 1	$2.70	Sept. 21	$1.90	Jan. 1	$4.95	June 27	$1.80
Lima	1.43	Jan. 1	2.48	July 20	1.98	Jan. 1	3.73	June 27	1.58
Indiana	1.23	Jan. 1	2.28	July 20	1.78	Jan. 1	3.63	June 27	1.38
Princeton	1.22	Jan. 1	2.27	July 20	1.77	Jan. 1	3.77	June 27	1.27
Lodi	1.25	Jan. 1	2.70	July 20	1.90	Jan. 1	4.00	June 27	1.80
Illinois	1.22	Jan. 1	2.27	July 20	1.77	Jan. 1	3.77	June 27	1.27
Waterloo, Ill.	.70	Jan. 1	1.75	July 20	1.25	Jan. 1	1.75	June 27	.75
Plymouth	.60	Jan. 1	1.65	July 20	1.15	Jan. 1	3.48	June 27	.65
Canadian Petrolia	1.83	Jan. 1	2.88	July 20	2.38	Jan. 1	4.13	June 27	1.98
Western Ky.	1.10	Jan. 1	2.40	July 19	1.65	Dec. 1	2.40	June 27	.58

MID-CONTINENT AND NORTH TEXAS FIELDS

Below 33	.75	Currie	1.00
33-39.9	1.00	Mexia	1.00
40 and above	1.25	Powell	1.00

Magnolia's Price Schedule

Under 28	.40	40 and above	1.25
28-30.9	.60	Corsicana, light*	1.00
31-32.9	.75	Corsicana, heavy	.40
33-39.9	1.00	Thrall	1.00

*Including Powell

HUMBLE O. & R. PRICES
(Ranger and Burkburnett)

Below 30	.80	36-38.9	1.15
30-32.9	.90	39 and above	1.30
33-35.9	1.00		

NORTH LOUISIANA-ARKANSAS FIELDS

Caddo, 38 degrees and above	$1.10	El Dorado, below 33	1.00
do 35 to 37.9	1.00	Bull Bayou, 38 and above	1.05
do 32 to 34.9	.90	do 35 to 37.9	.90
do below 32	.75	do 32 to 34.9	.75
Homer, 35 and above	1.10	De Soto	1.10
do 33 to 34.9	1.00	Crichton	.90
do 31 to 32.9	.90	Bellevue	.75
do below 31	.75	Smackover, 26 and above	.75
Haynesville, 33 and above	1.00	25 to 25.9	.60
do below 33	.90	24 to 24.9	.50
El Dorado, 33 and above	1.10	Below 24 Be	.40

GULF COASTAL FIELDS

	1923 Dec. 10	1922 High		1922 Low		1921 High		1921 Low	
Spindletop	$1.00	Jan. 1	$1.25	Dec. 30	$1.25	Jan. 1	$2.50	June 13	$ .80
Goose Creek	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Goose Creek "B"	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.70
Sour Lake	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Humble	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Batson	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Hull "A"	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Hull "B"	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
West Columbia	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Edgerly	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Vinton	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Jennings	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Dayton	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80
Saratoga	1.00	Jan. 1	1.25	Dec. 30	1.25	Jan. 1	2.50	June 13	.80

WYOMING FIELDS

Elk Basin	$ .95	Jan. 1	$1.90	Aug. 4	$1.20	Jan. 1	$3.10	June 27	$1.00
Grass Creek	.95	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.10	June 27	1.00
Big Muddy	.45	Jan. 1	1.40	Aug. 4	.70	Jan. 1	2.75	June 27	.50
Salt Creek	.60	Jan. 1	1.40	Aug. 4	.70	Jan. 1	2.75	June 27	.50
Lance Creek	.90	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.05	June 27	.95
Rock Creek	.60	Jan. 1	1.50	Aug. 4	.80	Jan. 1	2.85	June 27	.60
Osage	.90	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.05	June 27	.95
Cat Creek, Mont.	.95	Jan. 1	1.90	Aug. 4	1.20	Jan. 1	3.10	June 27	1.00
Sunburst, Mont.	.70								

CALIFORNIA

14-19.9	$ .60	25-25.9	.66	30-30.9	$ .71
20-20.9	.61	26-26.9	.67	31-31.9	.72
21-21.9	.62	27-27.9	.68	32-32.9	.73
22-22.9	.63	28-28.9	.69	33-33.9	.74
23-23.9	.64	29-29.9	.70	34-34.9	.75
24-24.9	.65			35 and above	.76

Financial Notes

Gulf States Oil & Refining Co.—Exchange of stock for Island Oil closed Dec. 5.

Producers & Refiners Corp.—Dividend for last quarter of 1923 passed. Company paid $1 March 15 and June 15 and 50 cents Sept. 15.

Marland Oil Co.—Negotiations for new financing have been called off. Upturn in oil situation is given as reason.

Sinclair Consolidated Oil Corp.—Reports of a deal with Hugo Stinnes to form a $20,000,000 oil company have been denied by officials.

Invincible Oil Corp.—Reports that Imperial Oil, Ltd., had bought control of this company have been branded as untrue by C. O. Stillman, president of Imperial, according to Toronto dispatches.

HORNELL, N. Y., Dec. 7.—The William Penn Stations recently opened a drive-in service station just outside this city near the Country Club. The company engaged in wholesale and retail business, handles "All-Pen" products manufactured by the Bradford Oil Refining Co. and is enjoying liberal patronage, according to E. A. Strohuber, one of the five owners of the William Penn Stations. The other four owners are: Mathew J. Burns, George Lovelace, Earl E. Hart and Paul A. O'Connor. all of whom are Bradford, Pa., men.

* * *

KANSAS CITY, Dec. 7.—Mutual Oil Co. will consolidate its Kansas City and Denver offices, making the executive headquarters in Denver. This arrangement will bring the production, refining and marketing divisions into one general office.

(Concluded from page 89)

few cars here and there. The Texas Co. bought early in the week at around 4⅝ cents per gallon and the Standard Oil Co. of New Jersey has made one or two additional purchases, largely in Texas. Domestic buying has not been large and prices have remained largely unchanged. It is impossible to buy any refined oil at less than 4½ cents. In Texas the lowest price is 4¾ cents today.

Natural gasoline stocks are increasing and the market has declined below the dreaded five-cent mark during the week. Some compression is selling at 4¾ cents in Oklahoma today and in Texas a number of sacrifice sales have been reported at 4½ cents. Blends are moving a little more freely as a result of the better conditions of the Navy market. Prices range from 6 to 6¼ cents on all grades.

For Fuel Oil Delivery

FARRELL is selling an increasing number of truck tanks to distributors for fuel oil delivery.

These tanks, furnished with or without bucket box as the buyer desires, are built only as Farrell builds them—to stand the gaff of constant service; to outlast the chassis on which they are mounted

The popular size is 1000-gallon capacity, but your own requirements can be met from 250-350 capacities for fast service to 2400-gallon capacity for industrial and large tank filling.

Your inquiries or orders will be handled promptly, and shipments will be made when promised.

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OIL STOCKS AND FINANCES

Pan American's New Financing Amounts To $20,000,000

NEW YORK, Dec. 6

PAN-AMERICAN Petroleum & Transport Co. has sold to a syndicate of bankers $12,000,000, par value, of bonds to be used to repay the company for advances to its California subsidiary, the Pan-American Petroleum Co. of California, and to provide for development of the California properties, which has been speeded up in the last year.

A new company has been organized and chartered in Delaware to operate the properties of the California company. This is known as the Pan-American Western Petroleum Co. and the parent company will exchange its holdings in the present California company, amounting to 1,275,000 shares, for 750,000 of the authorized 1,500,000 shares of the new company. Of the remaining 750,000 shares 525,000 shares will be sold to the stockholders of the parent company at $20 a share. This will bring in $10,500,000 more in cash, making the total financing amount to more than $20,000,000.

The interest of the parent company in California properties will thus be reduced from 100 to 59 per cent. The bonds will be known as the California division 1st mortgage 12-year convertible 6½ per cent sinking fund gold bonds. They will be secured by a mortgage on the California production properties and the new 40,000-barrel refinery near Los Angeles harbor. Chase National Bank, New York, is trustee.

Convertible Into Stock

These bonds will be convertible on the basis of $70 of bonds for each share of Pan-American B stock of $50 a share par value, or $1,400 of bonds for each twenty shares of $1,000 par value of stock. The bonds are callable at the company's option on six weeks' notice at 105 up to Nov. 15, 1925. The premium declining ¼ of 1 per cent for each six months thereafter until maturity on Nov. 15, 1935.

E. L. Doheny, chairman of the Pan-American Petroleum & Transport Co., following the directors' meeting, issued a statement outlining the plans of the company. He said:

"The Pan-American Petroleum & Transport Co. has in the last five years been expanding its business in California, and especially so during the last twelve months. This has been done through a subsidiary company, the Pan-American Petroleum Co., a corporation of California, of which only $1,265,152 par value of capital stock is outstanding, all of which belongs to the Pan-American Petroleum & Transport Co.

Has $21,000,000 Invested

"This California company has, however, expended out of its earnings and out of advances made to it by the parent company large additional amounts, so that at the present time its property, developments, pipe lines, etc., less depreciation to Oct. 31, 1923, and net current assets, show an aggregate investment just under $21,000,000. It owes to the parent company on open account approximately $16,000,000. The California company holds at the present time about 57,000 acres of oil lands and leases; a modern refinery that has just been constructed near Los Angeles Harbor, with an initial capacity of 40,000 barrels per day; storage facilities, including tanks now under construction, capable of storing 7,500,000 barrels of oil; pipe lines, terminals, loading stations and other facilites which are being provided at Los Angeles Harbor, and generally is rounding out into one of the important units of its kind in California.

Capital Rearranged

"It is deemed wise to rearrange the capital organization of the California Company in a manner to represent this growth, to fund the large amounts represented by advances of the parent company and, in connection therewith, to provide adequate funds for recouping the California Company's treasury in respect of certain of the expenditures already made and to provide for the extension of the properties of the company. The directors of the Pan-American Petroleum & Transport Co. accordingly have approved a plan designed to make available approximately $20,000,000 of additional cash for the above purposes, to take advantage of present market conditions in the industry.

"It is proposed to increase the authorized capital stock of the California company to $20,000,000 par value and to issue to the Pan-American Petroleum & Transport Co. so much thereof at par as will be necessary to repay the advances which have been made by the parent company. The Pan-American Petroleum & Transport Co. proposes to authorize an issue of $15,000,000 of its own bonds, $12,000,000 of which are to be sold to a syndicate to be organized by Blair & Co., Inc., and the net proceeds of which, as and when available, will be turned over to the California company, which also will assume the payment of the bonds and will enter into an indenture by which the California company will place a first mortgage upon its refinery and upon lands, pipe lines and other property in California to secure such payment.

New Company Planned

"The parent company proposes also to cause to be organized a new corporation to be called Pan-American Western Petroleum Co., with an authorized capital stock of 1,500,000 shares of no par value, and will transfer to it the entire capital stock of the California Company in exchange for 750,000 shares of this new company.

"It is proposed that an offer shall be made forthwith by the new company to the holders of the common stock and Class B common stock of the Pan-American Petroleum Transport Company giving them the opportunity to subscribe to stock of the new company at $20 a share, each owner of five shares in the Pan-American Petroleum & Transport Co. to be entitled to subscribe to one share of such new stock amounting to 525,000 shares. Certain of the principal stockholders of the Pan-American Petroleum & Transport Co. will underwrite this offer to the stockholders without compensation. The net proceeds of this stock offering will be received by the new company and by it will be advanced to the California company which will then be the new company's entirely owned subsidiary.

"Steps will be taken immediately to form the new company and to proceed with the other details proposed, and notice will shortly be sent to stockholders of the Pan-American & Transport Co. advising them of the date as of which their rights to subscribe to the new stock will be fixed and in respect of which they will receive negotiable warrants evidencing their subscription rights. It is expected that these warrants shall provide for the payment of the subscription price to the new company in four equal instalments."

The parent company for six months ended June 30, reports consolidated net profit of $14,259,009 after interest, depreciation, depletion and federal taxes, equivalent to $5.57 a share (par $50) earned on outstanding 2,557,630 shares of common stock. This compares with net profit in the seven months ended July 31, 1922 of $18,421,931, or $13.12 a share (par $50) earned on outstanding 1,403,535 shares of common stock.

Transactions In Oil Shares On New York Stock Exchange

1922 High	1922 Low	1923 High	1923 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Dec. 7 Sales	First	High	Low	Last	Ch'ge
135½	91	134	98¼	$40,000,000	$100	Associated Oil	1¼Q	July 25, 23	.....	.....	.....	.....	.....	.....
.....	.....	27¼	24⅞	40,060,500	25	do new	37½Q	Oct. 25, 23	4,700	26½	26⅝	25⅝	26⅝	+ ⅛
1375	117	160	98¾	50,000,000	100	Atlantic Refining	$1Q	Dec. 15, 23	1,900	115	118½	114⅞	118½	0
119½	114	120	115	20,000,000	100	do pfd	1¾Q	Nov. 1, 23	200	117	117	116	116	—1
56¼	19¾	55	9⅞	13,000,000	25	Barnsdall Corp. A	.62½	Apr. 30, 21	25,100	14¼	17⅝	14¼	15½	+1¼
39	17	22	6	3,713,275	25	do B	.62½	Apr. 30, 21	4,900	10	11½	10	10½	+ ¾
15¼	6¾	9⅛	1¼	150,000	N.P.	Caddo Central O. & R	.....	.....	1,500	2	2⅜	2	2⅜	+ ⅜
71⅞	48⅜	29¾	17⅛	17,377,000	25	California Petroleum	48¾Q	Dec. 1, 23	50,800	23⅜	24⅛	22¾	22⅛	— ⅞
98½	83	110½	90½	12,989,500	100	do pfd	1¾Q	Oct. 1, 23	500	96½	96½	96	96	—1
54	31⅝	62¼	22¾	1,217,427	N.P.	Cosden & Co	$1Q	Aug. 1, 23	79,000	31½	32⅜	30⅝	32	+1
102½	93½	109¾	85	6,998,000	100	do pfd	1¾Q	Dec. 1, 23	.....	.....	.....	.....	.....	.....
73¾	37¼	54	23	19,830,000	100	General Asphalt Co	.....	.....	27,900	33¾	38⅝	33⅜	36¾	+3½
111	68¾	83	60	7,416,100	100	do pfd	1½Q	Dec. 1, 23	1,400	67	70	67	69¼	+2¼
78	45	50¼	40	3,236,600	100	Gilliland Oil Pfd	2	May 15, 21	.....	.....	.....	.....	.....	.....
91¾	61¾	78	40¾	25,000,000	100	Houston Oil Co	.....	.....	32,300	54⅞	63¼	54⅞	62	+8
.....	.....	11¼	3⅜	450,000	N.P.	Independent Oil & Gas	.....	.....	900	6½	6½	5¾	5¾	— ⅛
25	12	19	1	5,000,000	25	Indiahoma Refining	‡.15	July 1, 21	4,100	2½	3	1⅞	2⅛	— ⅛
11⅝	5⅜	8½	2½	7,830,450	10	Indian Refining	.50	Dec. 15, 20	900	5⅜	5⅜	5	5⅜	+ ⅜
20¼	12½	19¾	7⅛	671,280	N.P.	Invincible Oil	.....	.....	9,400	10⅜	11	10¼	10⅜	+ ¼
8	¼	⅝	.03	25,709,510	10	Island Oil & Trans	.....	.....	.....	.....	.....	.....	.....	.....
7½	1½	3½	¼	14,662,890	10	Kansas & Gulf	.....	.....	600	⅜	⅜	¼	¼	0
.....	.....	27⅝	16	250,000	N.P.	Maracaibo Oil	.....	.....	19,600	26⅛	†27⅝	25	25¼	— ½
46¾	22⅝	59⅛	17½	1,017,504	N.P.	Marland Oil Co	$1Q	July 1, 23	166,300	27⅜	32¾	27⅛	32¼	+5¼
322	106¾	293	182	46,942,800	100	Mexican Petroleum	4Q	Oct. 20, 23	.....	.....	.....	.....	.....	.....
108	79¼	105¼	100¼	12,800,000	100	do pfd	2Q	Oct. 20, 23	.....	.....	.....	.....	.....	.....
54½	14⅜	28⅜	5⅜	444,894	N.P.	Mexican Seaboard	.50Q	June 1, 23	7,700	14	15½	13¼	13¾	0
82⅛	12	23¼	6	261,000	N.P.	do V. T. C	.50Q	June 1, 23	2,300	13½	13⅞	12½	13⅛	+ ⅛
16	11	12¼	8½	29,791,450	10	Middle States Oil	.30Q	July 1, 23	35,800	5½	5⅝	5	5¼	— ⅛
62	47	67	31	39,626,000	25	Ohio Fuel Supply	.56¼	Oct. 15, 23	600	31⅛	31¼	31⅛	31¼	0
4⅜	1¾	3⅛	⅞	5,359,425	5	Oklahoma P. & R	2	Apr. 1, 21	1,900	1¼	1¼	1⅛	1⅛	— ⅛
69⅜	42½	48⅞	31¼	3,500,000	N.P.	Pacific Oil Co	$1SA	July 20, 23	27,100	42⅜	43	41¼	42⅜	+ ⅝
100⅞	48⅞	93½	53	48,292,450	50	Pan-American P. & T	$2Q	Oct. 20, 23	46,700	62	64½	59¾	61⅛	— ⅝
95¾	44	86	50½	81,085,900	50	do B	$2Q	Oct. 20, 23	149,300	59⅜	62⅛	57	58⅞	— ⅛
12	3	6¼	1¼	198,770	N.P.	Panhandle P. & R	.....	.....	1,800	1¼	1¼	1¼	1¼	— ¼
78	61	68	51	2,935,200	100	do pfd	2Q	July 2, 23	.....	.....	.....	.....	.....	.....
59¼	28¼	69⅝	19¾	1,183,282	N.P.	Phillips Petroleum	.50Q	Oct. 1, 23	98,700	31⅝	33½	30¾	33⅛	+1⅞
12	4	6	1⅜	29,622,925	25	Pierce Oil Corp	.....	.....	6,100	2½	2¾	2	2¼	— ⅛
71	32	44½	18	15,000,000	100	do pfd	2	Feb. 1, 22	1,800	23½	24	22⅛	22½	—2¼
51	24⅛	58⅜	17	37,450,850	50	Producers & Refiners	50Q	Sept. 15, 23	64,400	25½	27½	24⅞	26⅞	+1⅜
49	36	49⅜	36	2,845,350	50	do pfd	87½Q	Nov. 5 23	.....	.....	.....	.....	.....	.....
38⅝	26½	32	16¼	69,993,325	25	Pure Oil Co	37½Q	Dec. 1, 23	22,500	19¼	20⅜	19	19¾	+ ¼
102¾	94	100	82½	13,000,000	100	do 8% pfd	2Q	Oct. 1, 23	.....	.....	.....	.....	.....	.....
67	47¼	55⅛	40½	676,520	13.40	Royal Dutch, N. Y. shares	2.15	Aug. 10	7,700	51½	52	50⅜	50½	—1⅜
48⅛	34⅝	41¼	29⅛	157,949	£1	Shell Transport	1.18⅛	July 26, 23	1,400	34	34¾	34	34¾	+1¼
13¼	12⅛	19¼	12⅜	8,000,000	N.P.	Shell Union	.25Q	Sept. 29, 23	17,500	15⅜	15¾	15	15½	+ ⅜
96⅛	90	95	90	20,000,000	100	do pfd	1½Q	Nov. 15, 23	500	91½	91⅞	91	91⅞	+ ⅜
.....	.....	16	6½	6,469,100	10	Simms Pet	.....	.....	27,400	10¼	12⅜	10	11½	+1¼
38¾	18¾	39⅜	16	4,479,565	N.P.	Sinclair Consolidated	.50Q	Nov. 30, 23	35,900	22⅜	23½	22¾	23½	+ ¾
102	97⅜	99⅛	80¼	19,278,600	100	do pfd	2Q	Nov. 15, 23	200	85⅛	85⅛	85	85	—2
11⅞	8¾	35	12⅛	20,579,090	25	Skelly Oil	.....	.....	18,700	21⅜	22½	20⅞	22½	+1¼
135	91¾	64⅛	47⅛	231,867,100	25	S. O. California	.50Q	Dec. 15, 23	35,800	55¾	57⅜	54¾	57¼	+1½
250½	169	44¼	30⅞	501,274,200	25	S. O. New Jersey	.25Q	Dec. 15, 23	22,300	35½	36⅜	35	36	+ ⅝
120	113¾	118¼	114¾	199,972,900	100	do pfd	1¾Q	Dec. 15, 23	1,600	116	116¾	116	116¾	+1¼
10¼	4	6¾	2	451,708	N.P.	Superior Oil	.50	Dec. 20, 20	2,300	2¼	2¾	2¼	2⅛	— ⅛
52¼	42	52⅞	34¾	164,450,000	25	The Texas Co	.75Q	Dec. 29, 23	28,500	41¾	42¾	x41¼	41⅝	— ⅜
32¾	18½	24¾	5½	8,380,340	10	Tex. Pac. Coal & Oil	.25Q	June 30, 23	10,500	9	9½	9	9⅛	+ ⅛
134	109¾	144	94	49,996,400	100	Tide Water Oil Co	2	Dec. 30, 21	800	115½	116⅜	115½	114¼	—1¼
20½	7½	14½	1¼	2,000,000	N.P.	Transcontinental Oil	.....	.....	31,400	2⅞	3½	2⅞	2⅞	0
134¾	85⅞	99¾	81	18,000,000	100	Union Tank Car Co	1¼Q	Dec. 1, 23	.....	.....	.....	.....	.....	.....
113	102	114	106	12,000,000	100	do pfd	1¾Q	Dec. 1, 23	.....	.....	.....	.....	.....	.....
34	25	30⅛	20	460,000	N.P.	White Eagle Oil & Ref	.50Q	Oct. 20, 23	1,900	23	23⅞	23	23¾	+1
11⅜	2⅛	5⅞	¼	959,046	N.P.	White Oil Corp	.....	.....	6,200	½	¾	⅜	¾	+ ¼

•New High †New Low ‡In Scrip xEx—Dividend Total Sales 1,078,200

Standard Oil Stock Traded In New York Curb Market

1922 High	1922 Low	1923 High	1923 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Dec. 7 Sales	First	High	Low	Last	Ch'ge
25	16⅝	19¾	13½	£3,000,000	£1	Anglo-American Oil	46½S.A.	May 15, 23	7,300	15⅜	15⅜	15⅛	15¼	— ¼
18½	4⅞	7¾	2½	(ab)500,000	N.P.	Atlantic Lobos	.....	.....	1,500	2¾	2¾	2½	2⅝	— ⅛
610	335	150	113	$ 1,000,000	100	Borne-Scrymser	4S.A.	April 16, 23	10	145	145	145	145	+5
110	83	94½	69	10,000,000	50	Buckeye Pipe Line	$1.50Q	Dec. 15, 23	110	73	73	71	71	—2½
225	175	237	207	1,500,000	100	Chesebrough Mfg	3½ Q	Sept. 29, 23	20	234	234	234	234	+2
118	104	.....	.....	1,000,000	100	do pfd	1¾Q	Sept. 29, 23	.....	.....	.....	.....	.....	.....
168	125	50	32½	10,000,000	25	Continental Oil	50 Q	Dec. 15, 23	1,800	39⅞	43¼	39⅞	43¼	+3¼
49	28	47½	15	1,500,000	25	Crescent Pipe Line	37½ Q	Sept. 15, 23	100	15	15	†15	15	—2
185	115	168	85	3,000,000	100	Cumberland Pipe Line	10A	Dec. 15, 23	90	105	106¾	105	106¾	+5¼
103½	79½	117	87	5,000,000	100	Eureka Pipe Line	2Q	Nov. 1, 23	130	103	103	98	100	+ ½
62	40	78	55	16,000,000	100	Galena Signal Oil	1Q	Sept. 29, 23	285	69	69	66½	68	—2
105	100	105	104	4,000,000	100	do new pfd	2Q	Sept. 29, 23	.....	.....	.....	.....	.....	.....
114	104	.....	.....	2,000,000	100	do old pfd	2Q	Sept. 29, 23	.....	.....	.....	.....	.....	.....
267	212½	41¼	28	43,750,000	25	Humble Oil & Ref	30Q	Oct. 1, 23	3,200	35	36¼	34⅝	36	+1¼
198	154	171	115	20,000,000	25	Illinois Pipe Line	8 S.A.	June 30, 23	90	138½	138½	137	137	—6
130¾	97½	128	92	39,222,750	25	Imperial Oil, coupons	75 Q	Dec. 1, 23	4,850	102	111½	102	110½	+8½
111	84	103	78	5,000,000	50	Indiana Pipe Line	$2 Q	Nov 15, 23	100	82	85	82	85	+3
27½	14	24⅞	13¼	(sh)7,188,138	N.P.	International Petroleum	25c	June 30, 23	33,300	16¼	17	15⅞	17	+1
259	150	168	123	180,000,000	100	Magnolia Petroleum	1Q	Oct. 5, 23	755	136	143	129½	139½	+3½
31⅛	23	29	19½	6,362,500	12½	National Transit	50Q	Dec. 15, 23	900	22⅞	23	22¼	22⅜	— ⅜
214	117	137	70	5,000,000	100	New York Transit	2Q	Oct. 15, 23	595	78	82	†70	77	—3
127	90	110	96	4,000,000	100	Northern Pipe Line	5 S.A.	July 1, 23	170	99½	102	99½	102	+3
365	71	85½	48¾	60,000,000	25	Ohio Oil Co	3Q	Sept. 29, 23	3,160	65⅛	68	65⅛	68	+3
44⅞	16	28¾	10½	10,000,000	25	Penn-Mex Fuel	.....	.....	1,900	26¾	26¾	20	21	—7
750	520	700	152	54,000,000	100	Prairie Oil & Gas	2Q	Oct. 31, 23	8,330	223	226	218	225	+2½
325	224	335	93	81,000,000	100	Prairie Pipe Line	2Q	Oct. 31, 23	2,910	98	99½	96	99	+1½
405	340	212½	161	4,000,000	100	Solar Refining Co	5 S.A.	June 20, 23	.....	.....	.....	.....	.....	.....
110	77	116	87	10,000,000	100	Southern Pipe Line	$2Q	Dec. 1, 23	120	92	92½	92	92	+ ½
249	150	195	100	20,000,000	100	South Penn Oil	1½Q	Sept. 30, 22	365	129	129	125	127	+4
70½	50½	88¼	66⅜	3,500,000	100	Southwest Pa. Pipe Lines	2Q	Oct. 1, 23	65	75	78	75	78	+3
135	58⅜	69⅞	49¼	220,181,638	25	S. O. Indiana	62½Q	Dec. 15, 23	56,800	59⅝	60	58⅜	59¾	+ ¼
690	41	57	36½	8,000,000	25	S. O. Kansas	50Q	Dec. 15, 23	2,300	42	52	39¾	40	—1
131	76½	139	83	17,500,000	25	S. O. Kentucky	$1Q	Oct. 1, 23	2,800	95½	98	95½	98	+1½
217	170	285	186	3,000,000	100	S. O. Nebraska	5 S. A.	June 20, 23	60	210	220	210	220	+10
675	41⅛	49⅜	35⅛	225,000,000	25	S. O. New York	35Q	Dec. 15, 23	10,100	42¾	43	41¾	42	— ⅜
585	261	317	270	14,000,000	100	S. O. Ohio	2½Q	Oct. 1, 23	30	276	279	276	279	—1
119½	113½	118	116	7,000,000	100	do pfd	1¾Q	Dec. 1, 23	.....	.....	.....	.....	.....	.....
37	30	39	21	1,806,200	100	Swan & Finch	2½S.A.	Nov. 1, 19	155	32½	37	32½	37	+8
710	36¼	55¼	40	60,000,000	25	Vacuum Oil Co	50Q	Sept. 20, 23	13,200	53¾	54¾	52¾	53¼	— ⅜
32	20	28	19	100,000	10	Washington Oil Co	$2A	Jan. 31, 22	.....	.....	.....	.....	.....	.....

We make the Valves you Need

If you are not thoroughly familiar with the many superior features of LUDLOW DOUBLE GATE VALVES, we would like to tell you about our product and our service.

When you get this information you will better appreciate why Ludlow Valves are the choice of the majority of valve users. Any Ludlow office will be glad to give you this information.

The Ludlow Valve Mfg. Co.

(*Established 1866*)

Factory: **Troy, N. Y.**

Branch offices: Kansas City, Mo.; Chicago, Ill.; Pittsburgh, Pa.; Boston, Mass.

NEW YORK BONDS

Week ended Dec. 8

	High	Low	Last	Ch'ge
Atlantic Ref. deb. 5s	97¼	96¾	96¾	— ⅛
Barnsdall 8s	96	95⅛	96	+1⅛
Calif. Pet. sf. 6½s	96½	95¼	95½	— ¼
Empire 7½s	90	89⅝	90	0
Humble O. & R. 5½s	97	96⅛	96½	+ ¼
Marland 8s ser A	103	100¾	101	—3
do 8s with war	119	116	118	+2⅜
do 7½s ser B	101⅜	98	99	—2⅜
do 7½s war	120	119½	119½	+1½
Mex Pet of Del cvt 8s	105¾	104⅜	105	— ½
Pan-Amer P & T 7s	102⅝	102	102¼	— ¼
do 6½ s	97¼	96½	96¾	+ ¼
Pierce Oil deb 8s	81	77	80	+1
Prod & Refrns 8s	107⅛	106¾	107	— ⅜
do 8s with war	111½	111⅜	111½	+1⅜
Sinclair Cons col 7s	93⅞	93⅛	93⅞	+ ½
do 6½s	88	87½	87¾	— ¾
Sinclair Crude Oil 6s	97	95¾	97	+1¼
do 5½s	97⅝	96½	97⅛	+ ⅝
Sinclair Pipe Line s f 5s	80¾	80	80¾	0
Tidewater Oil 6½s	102⅜	102¼	102¼	0
Union Oil of Calif 6s	98½	98⅜	98½	+ ⅜
Union Tank Car 7s	104¼	104	104	0

NEW YORK CURB BONDS

Week Ended Dec. 7

	High	Low	Last	Ch'ge
Anglo-Amer Oil 7½	102	101¾	102	+ ¼
Cities Serv 7s C	89	88½	88½	— ¼
do 7s D	88¼	88	88¼	0
Gen Asphalt 8s	104¾	104	104½	+ ¼
Galena Sig 7s	104	102½	104	+1½
Gulf Oil 5s	94¼	94	94¼	+ ⅛
Maracaibo 7 new	274	255	255	+10
Phil Pet 7½ w war	101⅝	101	101	—1
S.O.N.Y. 7s '25	101⅝	101½	101⅝	+ ⅛
do 7s '26	104½	103⅞	104½	+ ½
do 7s '28	105¼	105¼	105¼	0
do 7s '29	106	105⅜	106	— ¼
do 7s '30	106½	105⅜	105⅜	— ⅞
do 7s '31	107	106	106	— ⅝
do 6½s	106	105⅝	106	— ⅛
Sun Oil 7s	101½	101⅛	101⅜	— ⅜
United Oil Prod 8s	77	74⅛	77	+3
Vacuum Oil 7s	106¼	106	106	0

NEW YORK CURB MARKET

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Dec. 7 Sales	First	High	Low	Last	Ch'ge
13	6¾	10	4¼	10	Ark Nat. Gas	1,100	4¾	5	4¾	4⅞	+ ¼
9⅜	3¼	7⅝	3⅛	25c	Carib. Synd. ctf	18,700	3⅞	5⅜	3¾	4¾	+1
242	158	193	128	100	Cities Service	1,590	137½	138½	136	137	—1
72	51	70	64	100	do pfd	5,100	66⅞	67½	66⅞	67½	+ ½
25½	16¾	19½	12¾	10	do bankers sh	1,400	14	14	13⅞	13⅞	— ⅛
5	1¼	7⅛	1½	N. P.	Creole Syndicate	16,000	2½	2¾	2½	2½	0
		18¾	5	N. P.	Derby O. & R	900	7	7	7	7	0
2¼	.65	1	.25	5	Federal Oil	9,500	.44	.55	.43	.55	+ .15
19½	8⅞	19¼	16¼	N. P.	Fensland Oil						
		88	24	25	General Petroleum						
9¾	2⅝	7¾	3	N. P.	Gilliland Oil						
7¾	78	2⅞	.50	10	Glenrock Oil	3,100		.68	.55	.55	— .05
71½	48½	68¼	45¾	25	Gulf Oil Corp	7,100	56¼	59	56	58½	+2½
26½	2¼	4	1	N. P.	Kirby Petroleum	3,800	2¼	2¼	2	2	0
49¼	39⅞	58	45	N. P.	Mammoth A						
10	1	5⅜	1½	N. P.	Marland of Mexico	8,300	4	4⅜	3½	3⅝	— ⅜
19	9⅞	20¼	12⅞	10	Mountain Prod	12,600	14⅜	15⅜	14⅜	14⅞	+ ¾
13⅜	5¾	15½	8¼	5	Mutual Oil Co	26,100	11	11⅜	10¾	11	— ⅜
		5¾	3½	5	New Bradford	4,400	4⅛	4⅜	4⅛	4¼	+ ⅜
83	40	52	16	10	New Eng. Fuel Oil						
3	.67	1 11	.50	10	Omar O. & G	5,600	.65	.80	.65	.70	+ .05
		13	.76	N. P.	Peer Oil Corp	1,100	1⅜	2¼	1⅜	2	+ ¾
9¾	4⅞	14¾	9⅜	10	Pennok Oil	3,800	13	13¼	12½	13	+ ⅜
14¾	10	15⅛	6¼	10	Salt Creek Cons	500	7	7	7	7	0
22	12⅛	25¼	15½	10	Salt Creek Prod	10,600	18¼	18⅞	18¼	18⅜	+ ⅜
5	2⅝	4⅞	.80	5	Sapulpa Refining	1,700	.85	.86	.81	.86	— .05
3⅛	.80	4	.63	5	Seaboard O. & G	13,900	.90	1.00	.90	1.00	+ .05
21	12¼	26⅝	11⅜	N. P	Southern States	242,500	22½	24⅜	22⅜	24	+1½
34	23	30	19	5	Ventura Cons	200	26	26	26	26	+1
7⅞	2¼	10⅞	4	5	Wilcox O. & G	13,900	5¾	5⅞	5½	5⅞	+ ⅜

PITTSBURGH STOCK EXCHANGE

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Dec. 7 Sales	First	High	Low	Last	Ch'ge
12⅝	8¼	10	4¼	10	Arkansas Nat Gas	5,755	4¾	5	4½	5	0
55½	21			25	Barnsdall Corp A						
38½	20			25	do B						
112¾	64½	112½	88	100	Columbia Gas						
49	42			N. P.	Cosden & Co						
2⅞	2⅛	2⅛	2⅛	10	Kansas & Gulf						
31⅛	40	27	22¾	25	Lone Star Gas	515	24½	25	24½	24¾	0
58⅞	45⅝	58	51	50	Manuf. Light	718	53½	56½	53½	56	+2½
45	23¾	59¼	30¾	N. P	Marland Oil						
15⅝	12⅜	12	11¼	N. P.	Middle States						
23	15¼	19	11	1	Ohio Fuel Oil	20	13½	13½	13½	13½	—⅜
62	44½	65½	30⅛	25	Ohio Fuel Supply	670	31⅝	31⅝	31⅜	31⅝	+⅝
26¾	19	24½	18⅝	25	Okla. Nat. Gas	1,980	22¾	*24½	22⅜	24	+1¼
4	2	2⅞	1⅞	5	Okla. Prod. & Ref						
		74½	74½	50	Pan-American B						
11	6	10½	5¾	5	Pittsburgh O. & G	179	6⅜	7	6⅜	7	+⅝
65¾	57½	58½	50	13.40	Royal Dutch						
14⅞	8¾	14	5½	10	Salt Creek Cons	1,760	7½	7½	7	7½	0
37¾	8	35⅞	32	N. P.	Sinclair Cons						
47⅞	46½			25	The Texas Co						
14⅝	10	13½	7	N. P.	Tidal Osage	50	8	8	8	8	—⅝
18⅝	9⅜	14	10⅛	N. P.	Transcontinental						
25	24½	29½	23¾	25	Union Nat. Gas	680	28⅜	28⅜	28	28	—⅜

PITTSBURGH CURB MARKET

1922 High	1922 Low	1923 High	1923 Low	Par Value	Stocks	Transactions Week Ended Dec. 7 Sales	First	High	Low	Last	Ch'ge
		15	15		Central Ky. Gas						
4⅞	1	1½	.30	10	Colombia Synd						
3	1⅞	2⅜	.26	5	Duquesne Oil	6,000	.40	.60	.40	.53	+.22
		37	10	10	Forest Oil						
		1¼	1	1	Grant Oil						
71	50	68	46½	25	Gulf Oil Corp	1,900	56	56	56	56	— ¼
.12	.02	.03	.02	1	Homer Union						
		24½	16⅛	N. P.	International Pet						
9	6½	8½	4	10	Marshall Oil						
.42	.18	.36	.15	1	Mexican Wyoming	2,000	.18	.18	.18	.18	0
		3⅝	3⅝	5	New Bradford Oil						
1½	1	2⅜	1⅛		Oklahoma Eastern	3,652	2	2⅛	2	2⅛	+⅛
1¼	1	2	.60	10	Omar Oil & Gas						
52	29	22½	7	5	States Oil						
		80	80	100	Southwest Pa. Pipe						
.09	.03	.05	.03	1	Twin City O. & G						

*New High †New Low xEx Dividend